

117
MAY, 1951

Commercial Refrigeration

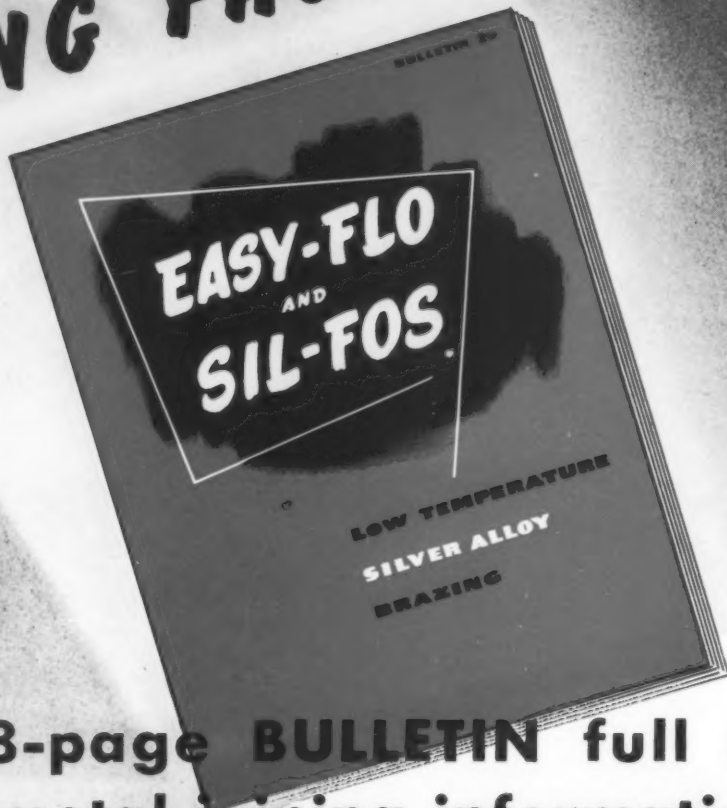
AND AIR CONDITIONING



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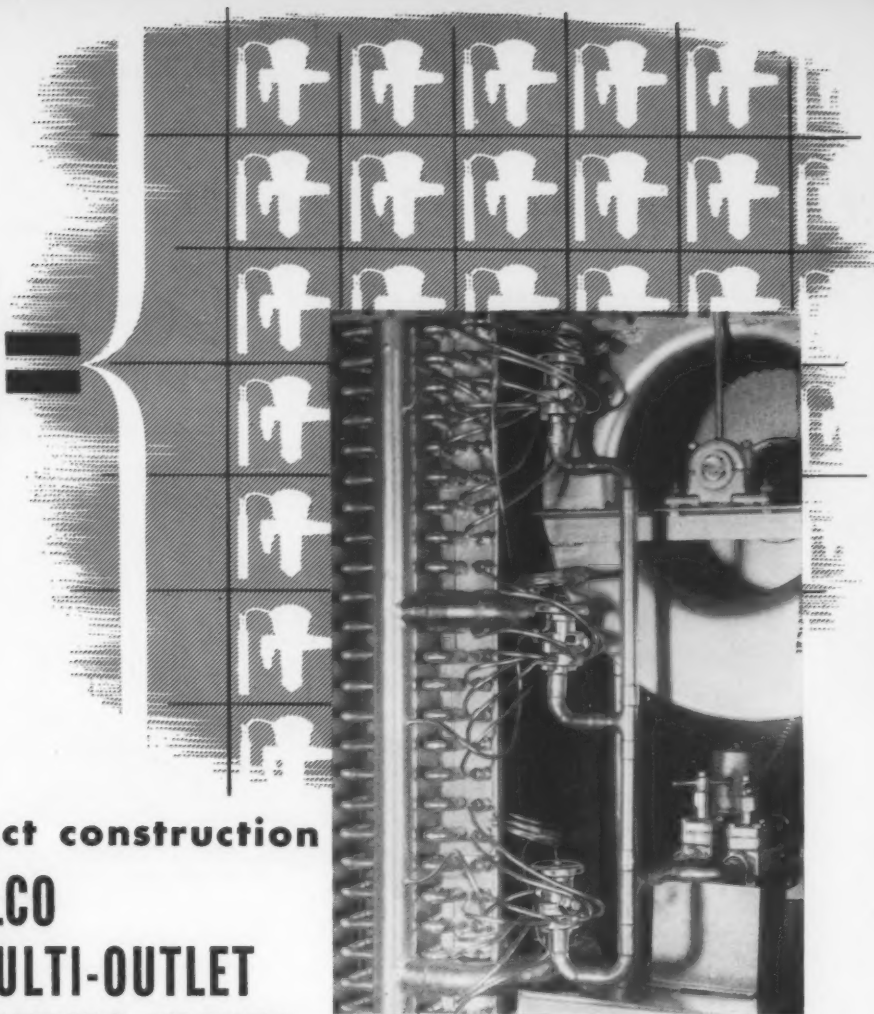
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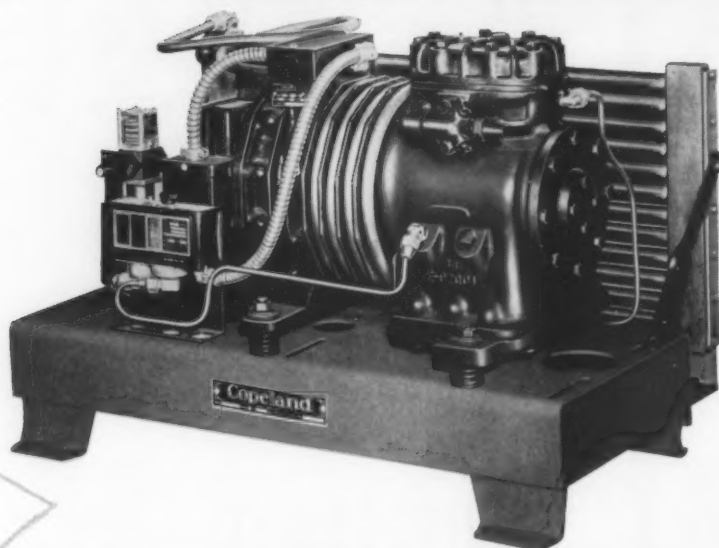
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MAY, 1951 • COMMERCIAL REFRIGERATION

MAY, 1951
VOLUME 8, No. 5

Commercial Refrigeration

AND AIR CONDITIONING

Established 1944 as
THE REFRIGERATION INDUSTRY

THIS MAGAZINE has no
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group, society or association.

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SELLING THE 1951 MARKET

2. Refrigeration in Industry

| | |
|--|----|
| LOW TEMPERATURE IN INDUSTRY..... | 30 |
| 1. Where It Is Used | |
| BRINGING THE ARCTIC TO OHIO | 31 |
| LOW-TEMPERATURE TREATMENT IMPROVES STAINLESS STEEL | 32 |
| COOLING A "HOT SEAT" | 33 |
| FROZEN MERCURY PATTERNS | 34 |
| YOU CAN GET MILITARY BUSINESS | 36 |
| COOLANT COOLING SPEEDS WAR PRODUCTION | 38 |
| 7-POINT TEST FOR OXY-ACETYLENE LEAKS..... | 39 |
| INDUSTRIAL APPLICATION BRIEFS | 41 |
| MILITARY APPLICATION BRIEFS | 44 |
| SERVICE CONTRACTS MUST BE PROMOTED | 48 |
| RESEARCH RELIES ON REFRIGERATION | 52 |
| HOW INDUSTRY USES COOLING | 84 |

DEPARTMENTS

| | |
|---|-----|
| About People | 50 |
| BTU'S | 29 |
| Commercial Refrigerator Sales News | 86 |
| Contractor News | 61 |
| Here's How | 97 |
| New Products | 68 |
| Opportunities | 102 |
| Practical Refrigeration Applications Manual | 89 |
| Refrigeration Industry News | 55 |
| Useful Literature | 66 |
| Index to Advertisers | 104 |
| Product Index | 24 |

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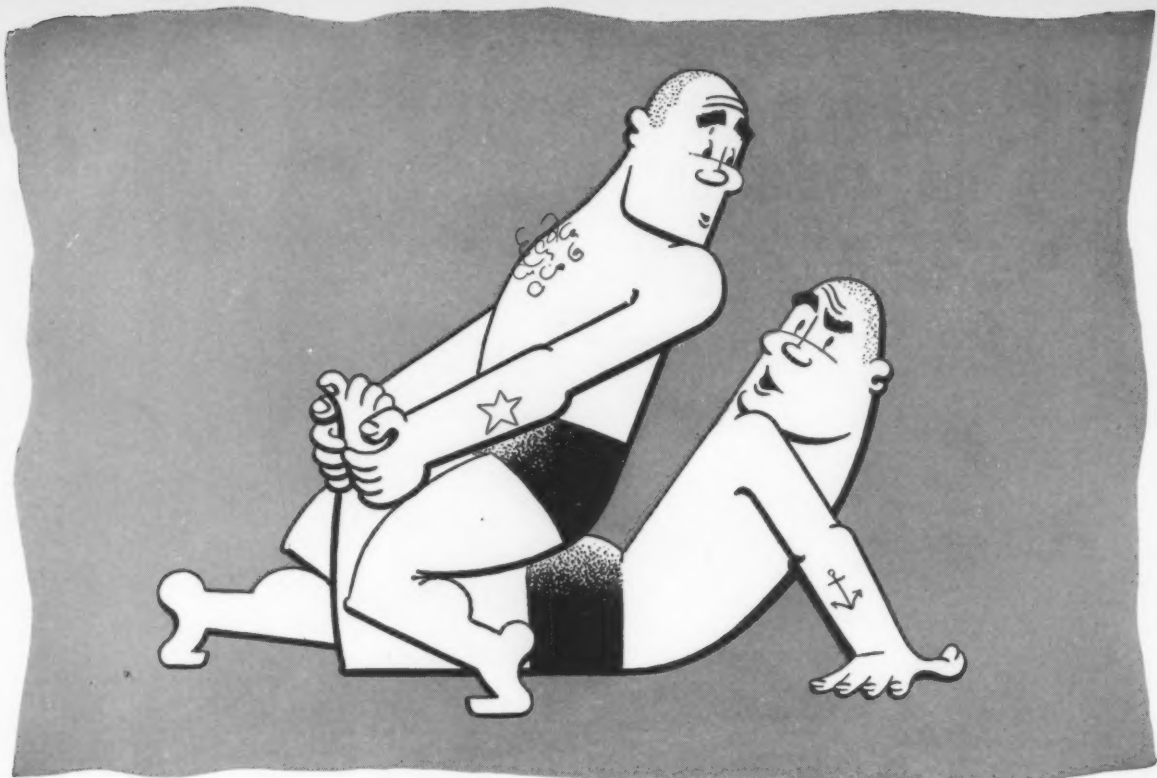
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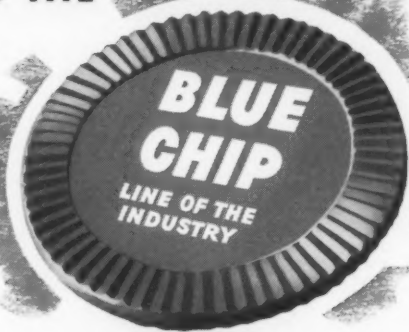
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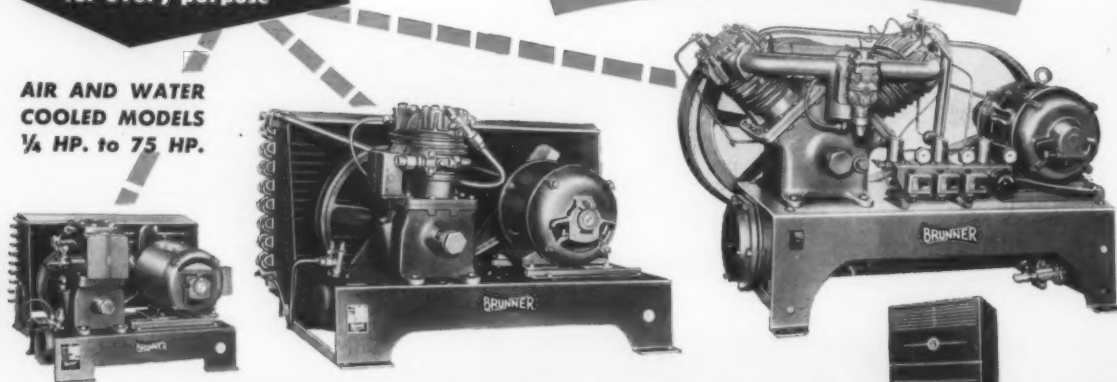
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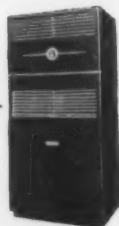


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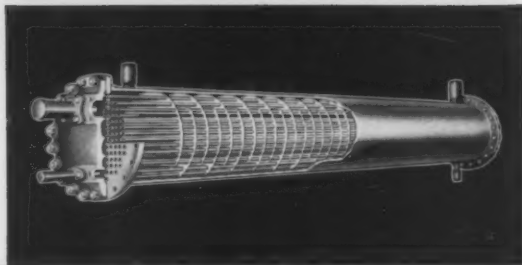


*right
down
the
line!*



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St. Louis, Mo.

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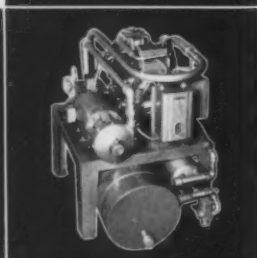
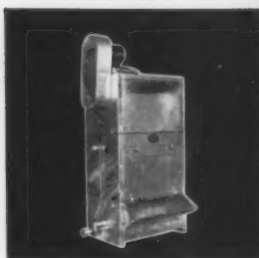
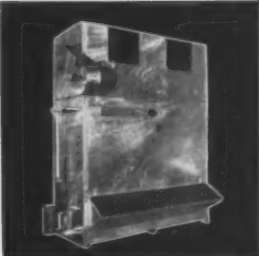
Offered in more than 70 standard sizes, from 6 $\frac{1}{8}$ "x18" to 30"x240", for Freon, Ammonia or other refrigerants — are easy to install and maintain.

HI-PEAK* WATER COOLERS

have large storage capacity and are galvanized *after* fabrication. Offered in seven standard sizes. For intermittent or continuous operation. EVERDUR Tank and factory insulation are optional.

WLO-COLD* INDUSTRIAL UNIT COOLERS

Five distinct series in more than 260 combinations with dry coil operation or continuous brine spray defrosting or for flooded Ammonia operation. Coils are easily accessible, fan sections are separable and large doors facilitate inspection. Hot Dip galvanized *after* fabrication.



Wherever refrigeration is used, ACME major components are in evidence and have deserved the preference of the Industry for more than 30 years — Write for Catalog and further information on any item required.

*Trade Mark

Acme

INDUSTRIES, INC. JACKSON, MICHIGAN

CONTINUOUSLY SERVING THE REFRIGERATION INDUSTRY SINCE 1910
Circle No. 13 on Reader Service Card for more information

MAY, 1951 • COMMERCIAL REFRIGERATION



we even fuss about the weather



In making ANACONDA Restrictor Tubes we carry fussiness to an extreme.

When we flow test each finished tube, for example, we take into account temperature and barometric pressure to eliminate all variables which affect basic flow readings.

And the testing instruments themselves are continually checked against master instruments which, in turn, are periodically checked against Bureau of Standards calibrated gasometers.

Length, bore, inside surface, temper must be uniformly correct. Every length is chamfered at both ends inside and out, thoroughly washed, thoroughly dried, given a final test, carefully bundled, with the ends of each bundle wrapped in paper.

ANACONDA Restrictor Tubes perform as you want and expect them to perform. For specific information write The American Brass Company, Waterbury 20, Connecticut.

5133

← Air flow test using a flowrater to check uniformity of inside diameter of the tube.

Precision-made

for refrigeration

ANACONDA®

RESTRICTOR TUBES

Circle No. 14 on Reader Service Card for more information
and AIR CONDITIONING • MAY, 1951



let **KOLD-HOLD** show you
*how you can lower
 refrigeration costs
 with serpentine
 plate banks*

Look at the heat-absorbing area there is in this "Serpentine" Plate Bank and you will see why it cools large areas so quickly and economically. The patented "Serpentine" design makes possible the equivalent of 100% prime surface. The refrigerant flows through channels formed by joining a flat metal sheet to an embossed metal sheet. The refrigerant is in direct contact with the surface, therefore the entire surface of each plate is effective heat transfer area.

When a number of "Serpentine" plates are joined by a manifold, or series connected, you are getting the maximum in refrigeration in a compact bank unit.

You need no additional medium of heat exchange with Kold-Hold Plate Banks, there are no extras to buy, simple fittings make possible easy installation almost anywhere by merely connecting to your main refrigerant line. As Kold-Hold Plate Banks have no internal tubing or piping, their weight per square foot is extremely low. Think of what these facts mean to you in lower maintenance and power costs.

You get efficient and dependable refrigeration at low cost by using Kold-Hold "Serpentine" Plate Banks. Send for full details today!



KOLD-HOLD

protects every step of the way

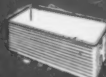


PLATE BANKS



PLATE STANDS

PREFABRICATED LINERS



SERPENTINE EVAPORATORS



"HOLD-OVER" PLATES

KOLD-HOLD MANUFACTURING COMPANY 503 E. Hazel St., Lansing 4, Michigan

Century

Serves the Electric Motor User in Two Important Ways:

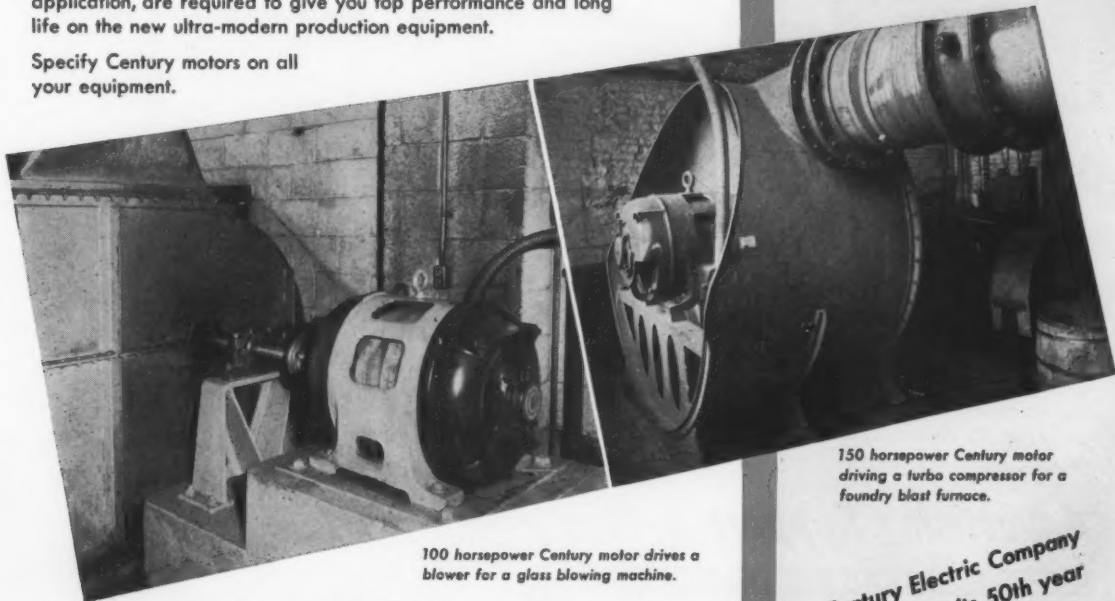
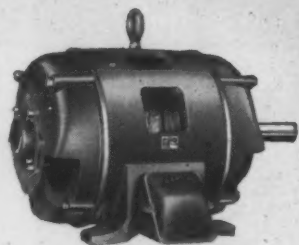
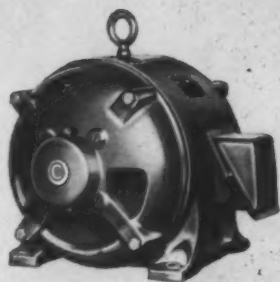
1. Century motors are designed and constructed for a long, dependable operating life.
2. Just as important—they are skillfully selected to match the operating characteristics of the many kinds of equipment they drive.

IN CENTURY'S wide range of types and sizes (up to 400 H.P.) there are available: 4 standard classes of starting torque characteristics—6 methods of speed control—constant and short time ratings—4 basic classes of frame protection against atmospheric hazards—a dozen methods of mounting the motor to the equipment—plus many special specifications to meet the requirements of the BIG NAME equipment manufacturers who use Century motors as a component part of their equipment.

Teamwork with equipment producers gives you skillfully selected motors from Century's wide range of types and sizes . . . properly applied to match the performance characteristics of the machines they drive.

Both a properly designed and constructed motor, plus skillful application, are required to give you top performance and long life on the new ultra-modern production equipment.

Specify Century motors on all your equipment.



100 horsepower Century motor drives a blower for a glass blowing machine.

150 horsepower Century motor driving a turbo compressor for a foundry blast furnace.

Century SERVICE Is Near Any CENTURY Motor Driven Equipment

Prompt Service is offered by CENTURY'S National Network of more than 200 Authorized Service Stations, supervised by 28 Century Sales offices.

1. Facilities for immediate exchange of most CENTURY standard ratings of standard construction are available at CENTURY Authorized Service Stations.
2. CENTURY Authorized Service Stations are qualified and equipped to service and repair any piece of CENTURY apparatus.
3. Genuine CENTURY renewal parts are available at CENTURY Service Stations, CENTURY Parts Distributors and at the factory in St. Louis.

Century Electric Company
is celebrating its 50th year
in the electrical industry

CENTURY ELECTRIC CO.

1806 Pine St. • St. Louis 3, Missouri

Offices and Stock Points
in Principal Cities



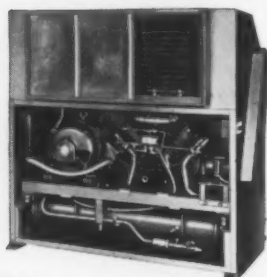
704

Now More Than Ever

It's *Curtis* for **PROFITS**



Because Most
Installations
are Within the
Curtis Range
— 2 through
40 Tons

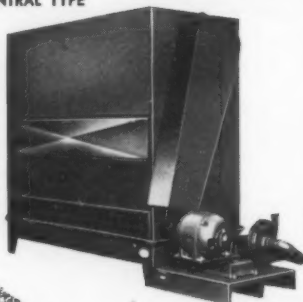


10 and 15 Ton
Complete CENTRAL TYPE



2 through 8 Ton PACKAGED UNITS
(Shipped to you completely assembled)

Evaporative
Condensers,
Cooling
Towers and Air
Handling Units



1/4 H.P. through 40 H.P.
Condensing Units.

With these units,
you can handle any
AIR CONDITIONING —
REFRIGERATION or AIR
MOVING JOB within this range
— and when the job is sold, it
STAYS SOLD because the **QUALITY**
IS THERE. No corners have been cut in the
manufacture of Curtis equipment — pound
for pound, it's the best buy in the industry.

Advertising Support A-Plenty

SATURDAY EVENING POST

TIME

NEWSWEEK

and many special
consumer publications
are pre-selling Curtis
equipment to your
prospects.



CURTIS REFRIGERATING MACHINE DIVISION

of Curtis Manufacturing Company

1915 Kienlen Ave.,

St. Louis 20, Mo.

Circle No. 17 on Reader Service Card for more information

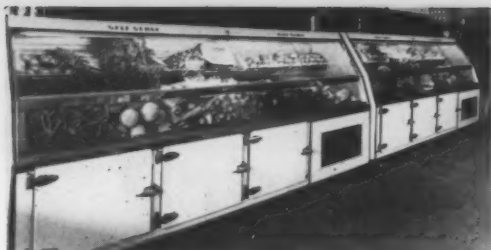
**NOTE — A Curtis franchise
may be open in your area.
Write, giving full details.**

**97 Years of
Successful Manufacturing**

Curtis

R-51-1

MAY, 1951 • COMMERCIAL REFRIGERATION



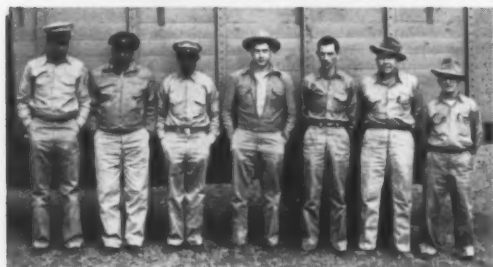
E. W. Kinnerly, Wisner, Louisiana. Two 102-10 Sales Builders.



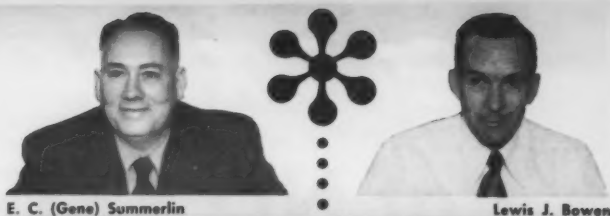
W. D. Ballard, Natchitoches, Louisiana. 118-10 Market Master and 17-VSX Vegetable Case.



C. H. Ruffino, Opelousas, Louisiana. 118-10 Market Master and two 17-VSX Vegetable Cases.



Installation and service crew. Employees participate in civic events and promote good will for the firm. Phillips-Summerlin Corp. has profit-sharing plan for employees.



E. C. (Gene) Summerlin

Lewis J. Bowen

**"Repeatedly
satisfied customers
doubled our sales in '50..."**

State E. C. (Gene) Summerlin and Lewis J. Bowen, owners of Phillips-Summerlin Corp., Super-Cold distributor in Alexandria, Louisiana.

Securing customers for refrigerated display cases in a low income rural area is a tough assignment. Folks are cautious... they want to know you before they buy. Phillips-Summerlin Corp. in just four years has made a world of friends and built an annual refrigeration sales volume of over a third of a million dollars in the territory around Alexandria, Louisiana, where super markets are practically unknown. Much of this business is from repeat sales of Super-Cold refrigerated cases.

"Old Humidity," as Gene Summerlin is affectionately known throughout the Southwest, insists on a square deal for every prospect. Traveling the territory, he gives freely of his vast knowledge of retail food merchandising. Summerlin, who has been a Super-Cold missionary for over 15 years, says, "Helping the merchant increase his profits is our big aim. Once we've shown him how Super-Cold cases actually earn dollars instead of costing money, the products practically sell themselves. Pleased customers go out of their way to help us sell more Super-Cold equipment."

Working on the inside, Lewis J. Bowen smartly guides promotion, advertising, and public relations. Through the firm's publication, "Freezin' Facts," he keeps close contact with merchants in the territory. A strong, friendly service organization gives prompt attention to all customers' needs with a sincere interest in obtaining top performance from customers' equipment. The firm's profit-sharing plan gives every employee an interest in pleasing customers. With Super-Cold's high-quality, saleable line of refrigeration, backed by a Super-Cold franchise and 16 loyal employees, Phillips-Summerlin Corp. has made remarkable progress selling Super-Cold cases.

The Super-Cold Corporation
1020 E. 59th St., Los Angeles 54, Calif.

Gentlemen:

Please send me details on available
Super-Cold franchises.

Name _____

Address _____

City _____

State _____

GUARDIAN OF
*Flavor
Appearance
Purity*

SUPER-COLD
Refrigeration

COMPLETE FOOD STORE REFRIGERATION UNDER ONE GREAT NAME

GET EXTRA CAPACITY

at NO EXTRA COST!

Get the



DRI-ZIT

Dryer

Check these

EXTRA VALUE FEATURES!

- ✓ Extra absorption capacity with no increase in size or cost.
- ✓ Protects system with *three* graduated screens on outlet side.
- ✓ Special dispersion plate and 120 mesh screen on inlet assures maximum drying action.
- ✓ Hydrogen brazed, all-steel bodies, tested to 3000 pound gauge.
- ✓ Approved by the Underwriters' Laboratories.



Always Extra Value

at No Extra Cost

SEE YOUR

KEROTEST

WHOLESALE

KEROTEST MANUFACTURING CO.

PITTSBURGH 22, PENNSYLVANIA

Circle No. 19 on Reader Service Card for more information

MAY, 1951 • COMMERCIAL REFRIGERATION



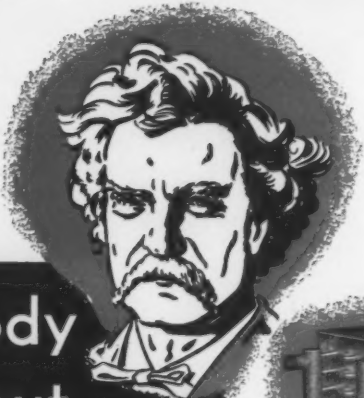
Air Handling Unit — Horizontal and Vertical units available in 8 case sizes with ratings of from 5 to 60 tons.



Comfort Conditioner — 2 case sizes with 900 and 1800 CFM and ratings of 3 to 8 tons.



Evaporative Condenser — 5 to 75 ton capacities built in sections to go through standard doors.

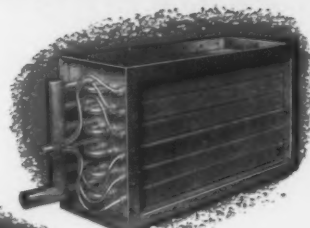


"Everybody talks about the weather..."

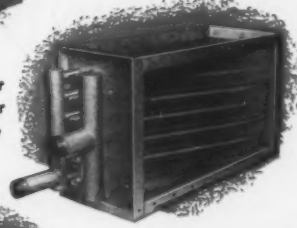
"but nobody does anything about it." Mark Twain (who lived a short distance from the present Bush plant) said that . . . and he was right. And he is still *half* right. Everybody *still* talks about the weather . . . more than ever before. But today something *is* being done about it. This determines *what* they say . . . and, most important, what they *buy*. Bush air conditioning and refrigeration equipment is designed to make customers and employees comfortable . . . and, because comfortable customers buy more and comfortable employees work harder, buyers of Bush equipment are more comfortable, too. Get acquainted with the Bush Representative in your territory and experience for yourself the comfortable feeling which comes with Bush service, engineering and dependability.



D X Coil — 6 standard heights and 17 lengths offer a wide variety of sizes for any direct expansion application.



Water Coil — For heating or cooling. Correctly circuited for minimum water pressure drop



Steam Coil — Available as standard or non-freeze. O-Gee curve allows free expansion of tubes. Sizes to match D X Coils.



Cooling Tower — Capacity ratings of 3 to 75 tons. Induced draft type permits locating anywhere inside or outside of building.

Buy the Best — and the Best is



HEAT TRANSFER PRODUCTS

BUSH

Bush Manufacturing Co.

WEST HARTFORD • CONNECTICUT

Circle No. 20 on Reader Service Card for more information

and AIR CONDITIONING • MAY, 1951

20-Year Guarantee!

ON THE
WETTED
DECK SURFACE

in these HM COOLING TOWERS

Hailed by Refrigeration users everywhere, these quality Halstead & Mitchell cooling Towers assure you of 20 years of foolproof performance. They're efficient, economical, and lastworthy—the ideal answer to stop costly water waste.

HOUSING

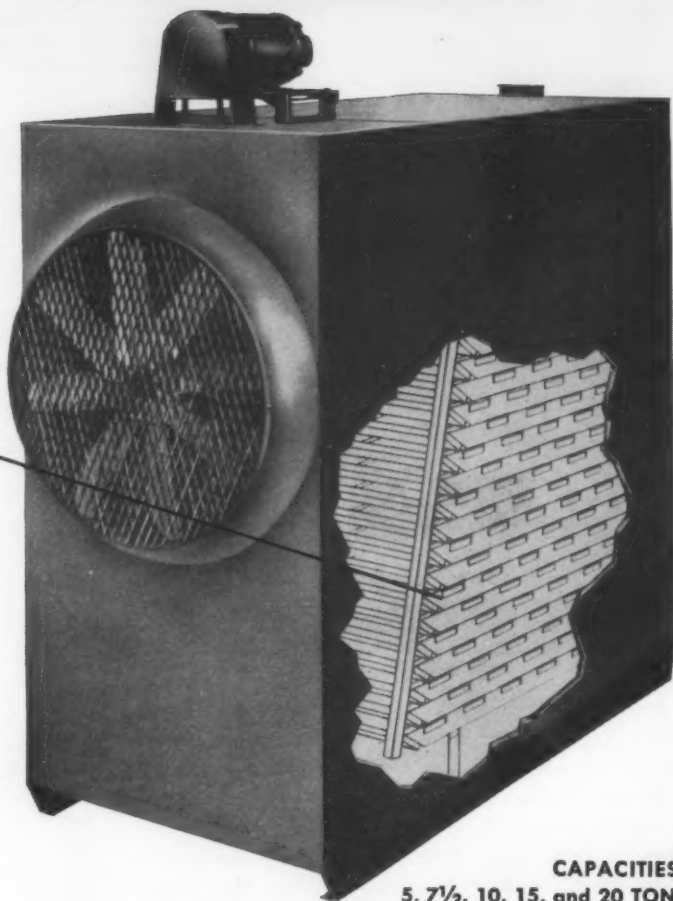
10 gage ($\frac{3}{8}$ "+) sheet-steel case with 3 coats Bitumastic lining. Electrically welded cabinet. All bolts used are Everdur for ease of disassembly after years of service.

WATER DISTRIBUTION

Gravity type distributing pan eliminates extra pumping head, cuts down windage losses, due to atomizing water.

FAN AND DRIVE

Quiet-operating stainless steel 8-bladed fan, stainless steel shaft, chrome-dipped rust-proofed pulleys. Cast iron bearing supports. Adjustable belt tension.



CAPACITIES
5, 7½, 10, 15, and 20 TON

Here's real efficiency in re-cooling and water conservation —20 years of savings provided by Halstead & Mitchell's special processed wetted deck surface. It's made of chemically treated special Koppers wood, guaranteed against rotting and proofed against fungi growth.

Send for Literature and Prices

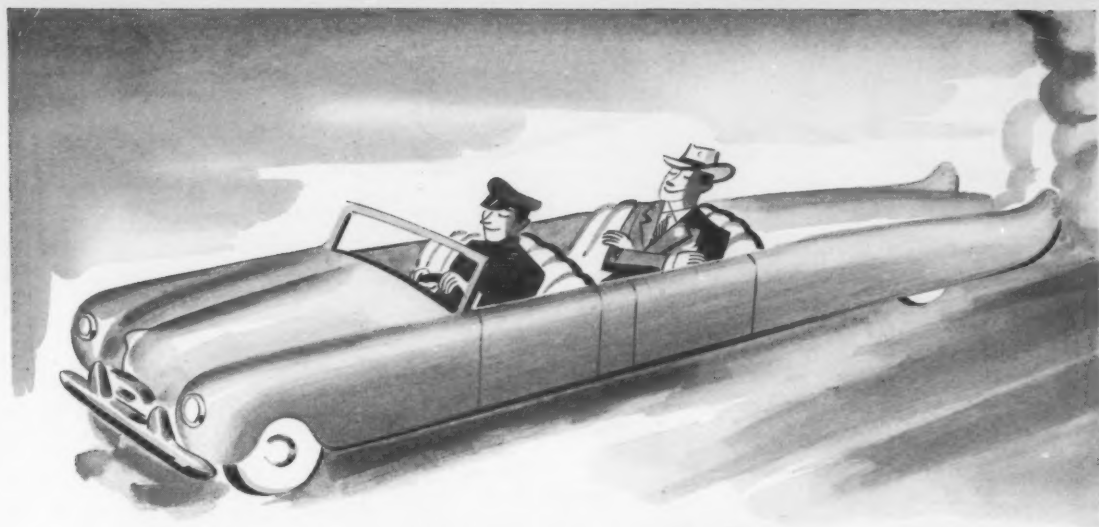
CARRIED IN STOCK BY LEADING WHOLESALERS EVERYWHERE

HM
Halstead & Mitchell

OFFICES: BESSEMER BUILDING • PITTSBURGH 22, PA.

Circle No. 21 on Reader Service Card for more information

MAY, 1951 • COMMERCIAL REFRIGERATION



Ed Jones is Riding in a Brand New Car—
because TYPHOON makes sure its dealers make money in
AIR CONDITIONING!

There's money in air conditioning—and Typhoon dealers are making it. They get the business, and they get the price! Because Typhoon has a sure-fire plan that's just about what the doctor ordered for healthy air conditioning profits...

TYPHOON brings you the most complete line of units in the quick-profit range — $1\frac{1}{2}$ -2-3-5-7 $\frac{1}{2}$ -8-10-15 and 20 tons. There's a size for every job!

TYPHOON units are ruggedly engineered—minimum maintenance, maximum profits and good will.

TYPHOON district managers give you 100% sales co-operation, with practical in-the-field training for your sales force.

TYPHOON delivers air conditioning at the lowest dollar cost per ton capacity—value that means full markup for you.

TYPHOON units are backed by 42 years of experience in cooling America... and by an advertising and promotion program that pulls a steady flow of leads for you.

Want to know about the finest dealer setup in the business? Write us today.



TYPHOON AIR CONDITIONING CO., INC.

794 Union Street, Brooklyn, New York

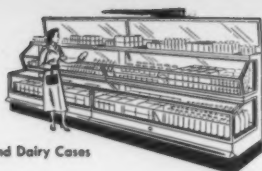
names of actual
Typhoon dealers
on request.

Circle No. 22 on Reader Service Card for more information

and AIR CONDITIONING • MAY, 1951



Open Vegetable Cases



Open Meat and Dairy Cases



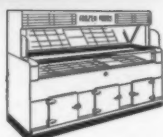
Slide-door Refrigerators



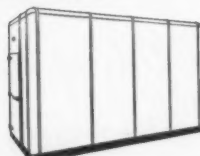
Reach-in Refrigerators



Meat Display Cases



Open Frozen Foods Display Cases



Walk-in Coolers



Food Freezers—Upright



Food Freezers—Chest

OVER 400 MODELS in the Tyler line of Commercial Refrigerators of all types!

This 26-page illustrated booklet gives complete data on Tyler facilities—part of which will be available for defense work.



The regular Tyler line meets every essential food refrigeration requirement for food stores, restaurants, hotels, institutions. Recent developments include open, refrigerated display cases with High Level Refrigeration and other Tyler features—for fast, self-service merchandising of meats, vegetables, dairy products. Save time for clerks—save time for customers!

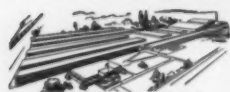
FOR DEFENSE PRODUCTION FACILITIES

—wire, phone or write
Tyler Contract Dept.
today!

TYLER

FLEXIBLE PRODUCTION FACILITIES

Tyler Fixture Corp., Contract Dept. RI-5 Niles, Michigan



Niles, Michigan



Cobleskill, N.Y.



Waxahatchie, Texas

Circle No. 23 on Reader Service Card for more information

PRODUCT INDEX

(Bold face page numbers indicate advertisements, other page numbers indicate editorial reference.)

| | |
|--------------------------------------|---|
| Anti-Freeze Compounds | 102 |
| Beverage Cooling Equipment | 60, 68, 77, 77 |
| Charging Hose | 51 |
| Coils, Unit Coolers | 21, 66, 91 |
| Cold Plates | 16 |
| Cold Storage Doors | 58 |
| Commercial Condensing Units | 2, 4, 6, 12, 18, 31, 34, 45, 67, 85, 94 |
| Commercial Refrigerators | 8, 19, 24, 27, 56, 57, 58, 64, 66, 67, 68, 77, 87 |
| Condensers | 14, 66 |
| Controls, Switches | 28, 90, 96, 100 |
| Cooling Towers | 14, 22, 64, 68, 72, 79, 95 |
| Copper Tubing | 10, 15, 40, 76 |
| Driers | 9, 13, 20, 51, 59, 63, 78, 101 |
| Electrical Supplies | 66, 78, 103 |
| Filters | 66, 71 |
| Fittings, Accessories | 66, 68, 70 |
| Gaskets | 90 |
| Gauges, Instruments | 66, 70, 72, 93, 102 |
| Ice Cream Freezers | 78, 104 |
| Industrial Applications | 34, 41, 42, 43, 84 |
| Insulation | 62, 98 |
| Liquid Chilling Equipment | 14, 38, 68, 72, 75, 77 |
| Liquid Indicator | 81 |
| Low Temperature Uses | 30, 31, 32 |
| Military Applications | 36, 44 |
| Motors | 17, 73, 78, 92 |
| Packaged Air Conditioners | 18, 23, 33, 66 |
| Packaged Commercial Equipment | 66, 71, 71, 74, 77, 91 |
| Pumps | 5, 99 |
| Refrigerants | 83 |
| Refrigeration Oils | 25, 35, 66, 88 |
| Replacement Parts | 65, 77, 93 |
| Shop Equipment | 5, 39, 66, 69, 70, 74, 98, 103 |
| Soldering and Brazing Supplies | Cover 2, 69, 101 |
| Special Applications | 33, 52 |
| Thermal Glass | 26 |
| Valves | 1, 9, 13, 46, 59, 74, 93, Cover 3 |
| Vibration Eliminators | 51, 57 |
| Water Coolers | 11 |



ANSUL REFRIGERATION OIL

THE NEW . . . IMPROVED . . . ANSUL REFRIGERATION OIL . . . IS A RESULT OF THE PERSISTENT SEARCH BY ANSUL CHEMISTS AND REFRIGERATION TECHNICIANS FOR THE FINEST QUALITY REFRIGERATION OIL . . . AT ANY PRICE!

Since Ansul Refrigeration Oil was introduced in 1949 . . . its acceptance by refrigeration men has continued to expand. In only two short years Ansul is one of the leading refrigeration oils sold exclusively through Refrigeration Wholesalers.

The New . . . Improved Ansul Refrigeration Oil is now available at leading refrigeration wholesalers everywhere. It meets, or surpasses, every specification established by Ansul Research for a high quality refrigeration oil.

BUY IT AT THE NEW LOW PRICE. Use it for more dependable, trouble-free lubrication.

NOTE THESE IMPORTANT ANSUL FEATURES —

- a. *Lower floc point.
- b. *50% lower wax content.
- c. Moisture — ANSUL CONTROLLED minimum.
- d. *Lower pour point.
- e. Rigidly checked for high stability.
- f. *Lowest affinity for moisture.
- g. New low price.
- h. Available in quart, 1-gallon and 2-gallon cans; also in 5-gallon and 55-gallon steel containers.

***Improved features.**



ANSUL CHEMICAL COMPANY

REFRIGERATION DIVISION, MARINETTE, WISCONSIN

ANSUL SULFUR DIOXIDE, ANSUL METHYL CHLORIDE, ANSUL OIL, KINETIC "FREON" REFRIGERANTS
ALSO MANUFACTURERS OF INDUSTRIAL CHEMICALS AND DRY CHEMICAL FIRE EXTINGUISHERS

HERE'S HELP FOR YOU IN SELLING

THIS FULL-PAGE
ADVERTISEMENT
is appearing in:

CHAIN STORE AGE—JUNE

FOOD TOPICS—MAY 14

QUICK FROZEN FOODS—MAY

NATIONAL GROCERS BULLETIN

—JUNE

SUPER MARKET MERCHANDISING

—MAY

and as Two-Page
Spread in:

MEAT MERCHANDISING—MAY

PROGRESSIVE GROCER—JUNE



When you see this you know

A clear, unobstructed view is what puts the self in self-service. That's where refrigerated cases because its inside surfaces stay free of fog and film under normal conditions. The famous Bondermatic Seal® guards against entrance of moisture, and keeps the air between the panes as dry as the Sahara. Thermopane's better view of merchandise.

To make sure you have this better seeing, better selling feature in the next case you buy, look for the Thermopane imprint on the Bondermatic Seal the case you're interested in is glazed with Thermopane insulating glass. Libbey-Owens-Ford Glass Company, 3451 Nicholas Building, Toledo 3, Ohio.

Thermopane LOOK FOR THE NAME ON THE SEAL BETWEEN THE PANES

FOR BETTER VISION SPECIFY THERMOPANE MADE WITH POLISHED PLATE GLASS



Three Panes of Glass
Blankets of Dry Air provide insulation
Bondermatic (metal-to-glass) Seal® keeps air dry and clean

Selling self-service refrigerated cases can be a lot easier if you have help—and we're ready to help you, two ways.

First—Thermopane in the cases you sell is a definite sales advantage. We've popularized the use of this outstanding construction feature so much that most case manufacturers offer it today. Be sure you have it in the cases you handle—then be sure you sell it.

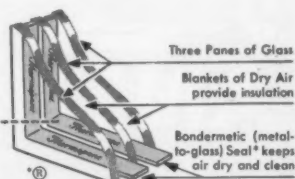
Second—Cash in on user preference for Thermopane, built up by our consistent advertising in the trade publications your customers read. Tie in with this continuing sales-building promotion. We'll be glad to supply you with reprints of this and other advertisements in the series. Limited quantities available free, for your use with your customers. Libbey-Owens-Ford Glass Co., 2951 Nicholas Building, Toledo 3, O.



Thermopane

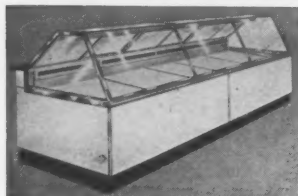
LOOK FOR THE NAME ON THE SEAL BETWEEN THE PANES

FOR BETTER VISION SPECIFY THERMOPANE MADE WITH POLISHED PLATE GLASS

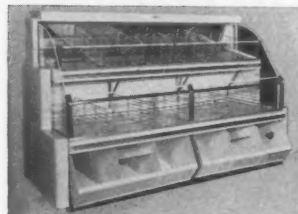




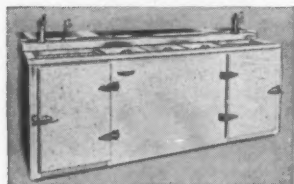
**EXCLUSIVE DESIGN
DISPLAY FREEZERS**



**ALL-GLASS & PORCELAIN
DISPLAY CASES**



**SELF-SERVICE DISPLAY
MERCHANDISERS**



**CLUB BARS AND
BEVERAGE COOLERS**



**ALUMINUM CLAD
SECTIONAL WALK-INS**

**Also a Complete Line of
Reach-Ins, Wall Cases, Dough
Retarders and Bain Maries**

HOW does your line compare in money-making features with the FOGEL 10-point profit plan?

• FOGEL GIVES YOU—

one of the most complete lines in the commercial refrigeration industry. Meet every demand—sell every market.

• FOGEL GIVES YOU—

a line with plenty of sales features and exclusive product designs that add "sales punch" and give you a head-start on competition.

• FOGEL GIVES YOU—

a quality product that is built to give years of dependable operation . . . designed with sales appeal in mind.

• FOGEL GIVES YOU—

a "Special Order" Department at your service to build models for special application.

• FOGEL GIVES YOU—

a line that offers competitive list prices with liberal discounts that give you the profit margin you're entitled to.

• FOGEL GIVES YOU—

a line backed by over a half century of sales and production experience, with distribution throughout the world.

• FOGEL GIVES YOU—

a line that is supported and promoted by a sound and aggressive advertising campaign.

• FOGEL GIVES YOU—

Store Planning Engineers ready and able to help you convert a prospect into a satisfied customer.

• FOGEL GIVES YOU—

a franchise of sound and fair policy that protects your reputation, your efforts and your profits.

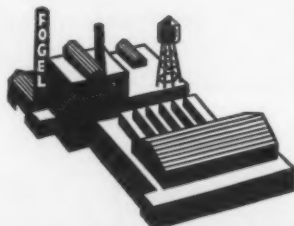
• FOGEL GIVES YOU—

not two or three, but ALL these essentials. And you must have them ALL before you'll have a line that "HAS WHAT IT TAKES" TO MAKE A PROFIT!

You, too CAN MAKE MORE MONEY
WITH THE FOGEL LINE!

"Sell the sizzle not the steak!" Sell the FOGEL line that offers you ALL the profit ingredients—not just an assembly of metal parts called a store fixture. Sell a service, not a price—and sell that service through FOGEL—a line that backs you up with ALL the product factors you need to make a profit.

Your Territory May Still Be Open—
Write Today for Full Information

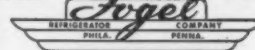


**Modern 4-Acre Plant
Geared to Mass Production**

Circle No. 26 on Reader Service Card for more information

and AIR CONDITIONING • MAY, 1951

CABLE "FOREFCO"



FOGEL

REFRIGERATOR COMPANY

Eadam at Kennedy Sts., Philadelphia 37, Pa.

I WANT FACTS...

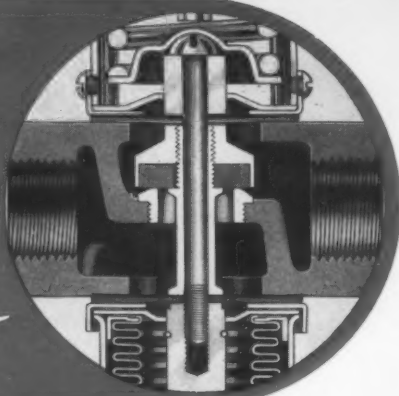
Please send me facts about an exclusive Fogel Dealer Franchise.

Name

Address

City State

here's
the
secret!



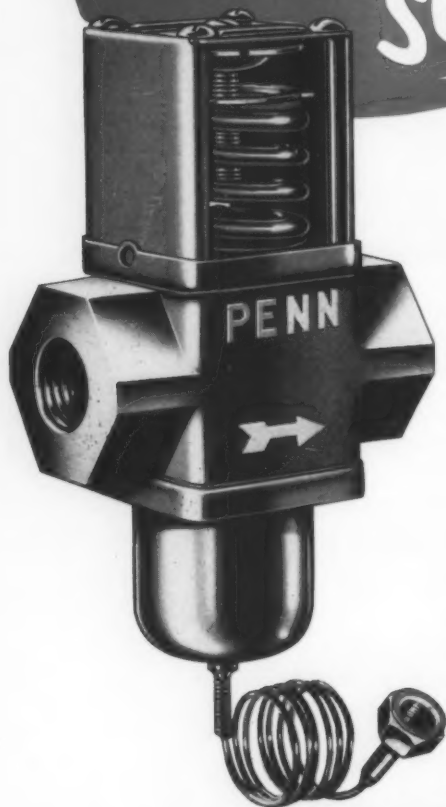
WHY PENN WATER VALVES STAY ON THE JOB LONGER

It's really very simple . . . yet so very effective. PENN's unique design incorporates two nylon-reinforced synthetic rubber diaphragms (shown in the cut-away view) to keep water out of the bellows, range spring and sliding parts.

Thus, these important "working parts" are free from the destructive effects of sedimentation and abrasive deposits which cause premature wear and water valve failure.

But that's not all! The scientific design of the PENN Series 246 water valve eliminates water hammer . . . sticking of seats . . . need for lubrication. And, it is highly sensitive to changes in refrigerant head pressures to assure highest efficiency.

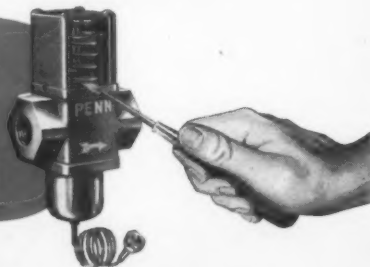
These better PENN Series 246 water valves are built in sizes from $\frac{3}{8}$ " to $2\frac{1}{2}$ " and in flanged or threaded styles. Ask your wholesaler or write **Penn Electric Switch Co., Goshen, Indiana**. Export Division: 13 E. 40th Street, New York 16, N. Y., U.S.A. In Canada: Penn Controls Limited, Toronto, Ontario



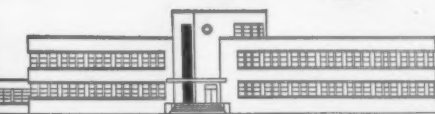
EXTRA FEATURE

Easy Manual Flushing

The PENN Series 246 water valve may be flushed manually by inserting screwdriver, or similar tool, under the main spring and prying it upward (away from valve body).



PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES

Circle No. 27 on Reader Service Card for more information

EXPERIMENTS IN FROZEN PRE-COOKED DINNERS now being conducted could conceivably lead to the complete elimination of kitchens in the hospital of the future, according to Dr. William Wheeler of New York City's Cancer Institute. Dr. Wheeler has been investigating the possibilities of adopting for hospitals use a program of pre-cooked meals prepared in a commercially operated diet kitchen and delivered to the hospital in compartmented aluminum trays. If such a program proves practical, he points out, the traditional hospital kitchen may well be replaced by low temperature storage facilities for holding large quantities of the pre-cooked meals.

WHICH CAME FIRST, refrigeration or air conditioning? Another slant on this question is provided by a study of the achievements of Dr. John Gorrie of Apalachicola, Fla. Dr. Gorrie was awarded a patent 100 years ago on the first American ice-making machine, but a review of his work reveals that this invention was the result of his efforts to develop a method of cooling bedrooms of patients suffering from malaria and yellow fever. This would seem to indicate that air conditioning, as such, is not an offshoot of the refrigeration industry, but rather its forerunner.

FROZEN CONCENTRATED MILK that will remain acceptable as a source of beverage milk for several months after it goes into frozen storage is no longer an impossibility, reports the U.S. Dept. of Agriculture's Bureau of Dairy Industry. However, the Bureau cautions, certain technical problems of production and distribution must still be solved before this product can be marketed satisfactorily through regular commercial channels. On the basis of their research to date, Bureau scientists conclude that the milk concentrate should be frozen at a rapid rate and stored at not less than —10 F, with the storage conditions actually being more important than the freezing rate.

"6 DEGREES COOLER INSIDE!" That might well be the slogan inscribed on the vehicles in the 600-bus fleet of Houston Transit Co., since the company has started to paint the tops of all its buses white. Exhaustive tests have indicated, according to reports from New Jersey Zinc Co., that a slow-chalking white enamel containing zinc oxide actually lowers the average temperatures inside a bus 6 to 8 degrees more than when other kinds of paints are used on the roofs. Some of the "white toppers" have been in use for as long as two years.

WHAT IS THE SIGNIFICANCE OF 'ASA'—as for example in the recently approved revised ASA B9 Safety Code for Mechanical Refrigeration? It means in effect that the code was formulated under procedures developed by the American Standards Association. It does not mean that the code becomes a regulatory "law" for any state or municipality, but such is the prestige behind an ASA code or standard that the authorities usually will follow it in its sense if not to the letter in drawing up new or revised safety regulations.

REFRIGERATION IN INDUSTRY. Featuring the important role air conditioning and refrigeration play in modern industrial production, this month's issue has many "how to" and "where to" suggestions designed to help you merchandise profitably in this field as the defense program gains momentum. Besides a special section listing dozens of applications of refrigeration and air conditioning to various production processes, there are also stories on low temperature refrigeration, applications of liquid chilling equipment, how to get military business—and that's only the beginning. Next month's issue will help you sell food service refrigeration equipment in "the 1951 market". Watch for it!

INTRODUCTORY NOTE

THIS month we begin a three-article series on low-temperature refrigeration as applied to industrial uses, written by one of the country's foremost authorities on the subject. Always an important phase of refrigeration, the subject of low-temperature applications is especially timely at present in view of the mounting requirements of the defense production program.

Part 1 of the series, which appears below, describes the general applications of low-temperature equipment to industry. Part 2, to appear next month, will outline the types of systems generally employed in low-temperature work, and Part 3 will deal with operating and maintenance problems and how best to handle them.

LOW TEMPERATURE IN INDUSTRY

1. Where it is used

LOW temperature refrigeration, after 10 or 11 years of intensive development, stands today on the threshold of new and virtually unlimited expansion in the field of industrial applications.

Hundreds of applications of low temperature equipment have been utilized during the past decade; hundreds more doubtless will be developed during the next. Some of these no doubt will be in fields far removed from existing usages.

Experience has shown that somewhere in virtually every industry the techniques of low temperature refrigeration can be profitably applied in conjunction with product development, research, testing, or industrial processing.

One of the most common applications of low temperature equipment is in all-weather test chambers designed to produce in the laboratory any desired environmental conditions, including various closely controlled

combinations of temperature, pressure, and humidity.

Such chambers make possible the rapid testing of all types of equipment under conditions comparable with those encountered anywhere on the face of the earth or in flight at any altitude, with substantial savings of time, money and personnel in the process.

Under the general classification of test chambers, there are several subdivisions according to the various types of applications. These are: (1) high altitude and wind tunnel chambers, (2) humidity cabinets, (3) altitude cabinets, (4) low temperature cabinets, and (5) low temperature and high humidity cabinets. A brief discussion of each type follows.

High Altitude and Wind Tunnel Chambers—These flight similitude cabinets and wind tunnel chambers are designed and constructed to simulate flight conditions. They will reproduce the low air pressures encoun-

By Thomas J. Loppiccolo

Vice President
Bowser Technical Refrigeration

tered in high altitudes and low temperatures, as well as high temperatures and high humidities, if this particular feature is required. In other words, it combines all the variables of temperature, humidity, and pressure in one test facility in order to give complete control and perform the majority of the environmental test conditions.

Wind tunnel chambers, of course, are large variations of a self-contained cabinet, in that the size of a wind tunnel may be considerably larger or smaller depending upon the terms and specifications involved. Large wind tunnels for testing complete aircraft represent huge installations requiring thousands upon thousands of horse-

power for mechanical refrigeration connected for the cooling process.

Chambers of this type are used for testing all types of aircraft components and equipment, including radio transmitters and receivers, generators, oxygen regulators, instruments, motors, fire extinguishers, aerial cameras, bomb sights and other optical apparatus, bomb rack clips, hoses for flexible connections, hydraulic cylinders and actuators, and countless other types of material which must be subjected to simulated flight conditions to determine their suitability for actual operational use.

Applications Unlimited

Industries which can use this type of test facilities, however, definitely need not be limited to the manufacture of aircraft or aircraft components. A case in point is the fountain pen manufacturer who wanted to develop a fountain pen which could be carried by passengers in commercial airliners flying at high altitudes without having the ink forced out of the pen by the change of pressure.

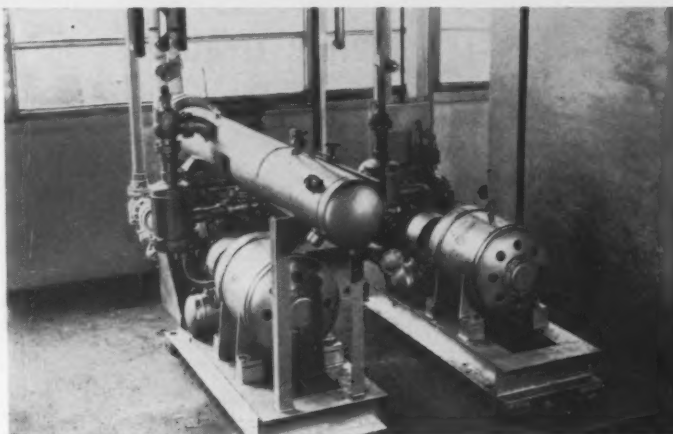
It is obvious from this application that test facilities of this nature can be practically used in an infinite variety of industries, providing that the planners in these industries have enough foresight and vision concerning the use of their products.

Humidity Cabinets

Humidity Cabinets—Under this classification comes the relative humidity cabinet which simulates low and high relative humidity within a fairly narrow range of temperature, usually from just slightly above freezing to just slightly under the boiling point of water. These cabinets are principally used to check the effect of high humidities on electrical apparatus and also to determine the results of accelerated corrosion.

In order that these pieces of equipment, which are to be ultimately used to check corrosion of other apparatus, last long enough to be amortized as part of capital equipment in a plant, it is imperative that these cabinets be built with considerable attention given to the materials of construction. The use of stainless steel and other non-corrosive materials throughout the manufacture of the equipment points toward a satisfactory product.

Also, completely automatic con-



CASCADE SYSTEM cooling a low-temperature research test chamber for a welding equipment manufacturer uses a high-stage condensing unit (left) to condense the refrigerant in the low-stage unit mounted beside it.

Bringing the Arctic to Ohio

AN UNCOMMON type of low temperature installation was recently completed by Airtemp Construction Corp., Dayton, Ohio, for the Hobart Brothers Co., Troy, Ohio, manufacturer of welding equipment. It is a "cascade" system, in which one compressor is used to condense the refrigerant in the other one.

The installation was made to refrigerate a new test chamber, built to enable Hobart's engineers to test the starting characteristics of gasoline engines under severe Arctic conditions.

The test chamber consists essentially of a cork and cement room, 12' long x 8' wide x 12' high inside. It is insulated with 12 in. of cork board laid in three layers and finished inside and out with cement plaster. In front of this room is a vestibule, 8' long x 8' wide x 12' high, insulated with 6 in. of cork board.

The chamber is cooled by means of a low temperature blower unit with electrical defrosting system. The coil is operated with Freon-22 and is maintained in a flooded condition by means of a high side float valve. It is connected to the low stage compressor, an Airtemp 7-cylinder radial unit, complete with 30 hp motor. The low stage is condensed by a high stage unit in a cascade system using a water chiller as the interstage condenser. The high stage unit is an Airtemp 5-cylinder radial compressor unit with a standard condenser and a 30 hp motor. It is charged with Freon-12. F-12 is expanded in the tubes of the water chiller, and the condensing F-22 is in the shell of the water chiller.

Operating conditions for the designed temperature are as follows: low stage suction pressure, 18" Hg.; condensing pressure, 30 to 50 lbs.; high stage average suction pressure, 5 lbs.; condensing pressure, 100 lbs.

Make-up air for the heaters and carburetors of the engines being tested is supplied through a silica-gel dehumidifier. The dehumidifier is reactivated by means of a 20,000-watt heating unit which is thermostatically controlled to provide 265 degrees air to the reactivation side of the silica-gel wheel. It is designed to provide a maximum of 100 cfm of air dehumidified to .6 grains per pound. The resultant air is introduced into the test chamber after having passed over two water coils and one direct expansion Freon coil at a temperature of approximately 0 to 20 F.

Tests show that this installation will cool the test chamber and a 3000-lb. engine-driven generator from room temperature to -65 F in approximately 24 hours.

Low-Temperature Treatment Improves Stainless Steel

FOLLOW-UP of an unexpected result from routine tests, i.e., the presence of magnetism in a fractured piece of stainless steel, has led to a new process whereby this metal can be made some 100% harder than has been possible by conventional metal-working procedures. This hardness increase, achieved by working at sub-zero temperatures (down to -300 F) makes stainless steel, never noted for its hardness, a more versatile metal.

During the course of fundamental investigations of cast stainless steels of Crane Co. laboratories, impact tests were conducted at the temperature of liquid nitrogen (about -300 F). After the tests had been completed, one of the samples, which had returned to room temperature, exhibited a strong magnetic effect near the fracture. Other samples broken at room temperature showed none of this magnetism. Subsequent tests showed that temperature alone was not a factor. Apparently the increase in permeability had been caused by a combination of the severe plastic deformation—caused by the impact tests—and the low temperature.

When steel is either heated or cooled certain changes in its crystal structure may take place. In cooling to sub-zero temperatures, stainless steel can be made to change from the gamma to the alpha state, and this transformation brings about various changes in physical characteristics. Magnetic permeability is but one property affected.

To research engineers this hinted that other improved properties could be expected by working the metal at low temperatures. Tests made with the broken impact samples by Dr. Ziegler of Crane Co. confirmed this supposition—adjacent to the fracture, hardness had increased over that in the "as-cast" condition by some two to three times (to approximately 400 V. P. N.).

This discovery was the basis for intensive cooperative studies by Dr. Ziegler and by P. H. Brace of Westinghouse Research Laboratories, whose engineers explored the effects of rolling and drawing at sub-zero temperature. Combination of preparatory heat treatment, sub-zero working, and subsequent high temperature aging were tried. Some of the best results were obtained by a short period of heat treatment at about 2100 F; quenching in water; cooling to about -300 F; rolling the metal while at that temperature from one-fourth inch down to $\frac{1}{16}$ inch; and then aging for several hours at about 750 F.

The results were better than obtainable by low temperature rolling alone, by preparatory heat treatment alone, or by any combination of these processes. Significantly, the highest hardness and strength values were obtained in these specimens rolled at the lowest temperature. Tensile strength, yield stress and hardness were all increased by this process as compared to conventional rolling. Of particular interest was the increase in proportional limit, which proved to be more than double that obtained by rolling at room temperature. Torsional yield stress and fatigue strength was also increased by about one half. The process is being referred to as Zerolling.

One sample tested showed an even more remarkable characteristic. Austenitic stainless steels worked by conventional methods have a very low wear resistance, as compared to the best wear-resistant metals.

Yet one of the specially processed stainless steel specimens, differing slightly in composition from the others, showed a wear performance equal to or better than the best wear-resistant metal combinations.

trols, eliminating wherever possible manual operations, permit long and continued use of the test chambers, twenty-four hours a day for many days or even months without requiring the attention of an operator. These types of tests are commonly called for in order to determine the rate of corrosion and when and if corrosion has started.

Some of the typical applications for a humidity cabinet are: checking the electrical leakage effects in radio and television apparatus; accelerated weathering test for a wide range of materials such as fabrics, parachute cord, plastic, paper goods, clothing, packaging material, and adhesives; developing suitable packaging materials for tobaccos, food products, and bakery goods; checking operation of munitions and the functioning of all types of armament; conducting of corrosion tests on all types of materials; incubation and development of biological cultures; and seed germination and storage.

Altitude Cabinets

Altitude Cabinets—There has been a quite limited but nonetheless important application of equipment designed strictly to simulate altitude conditions for the testing of equipment affected only by altitude and not by low temperature.

One such application was the calibration of altimeters used in commercial aircraft. Another was in the vacuum packaging of certain food products and paint in cans. In this type of apparatus, for instance, was developed the technique for vacuum packing as we know it today.

Low-Temperature Cabinets

Low Temperature Cabinets—The low temperature cabinet as manufactured today consists essentially of a top opening compartment refrigerated by a mechanical refrigeration system. These units are strictly designed for low temperature use and usually for continuous operations at low temperatures with hardly any shut-down period. They are frequently kept in operation continuously because of the economics involved and because of the production capacity desired.

The use of low temperature cabinets for expansion fitting, hardening of tools, stabilization of metals, de-

Continued on page 90



COOLING MEANS SAFETY and comfort for the operator of this power shovel as he loads hot slag from a steel mill's dumping pits into waiting freight cars.

Cooling a "Hot Seat"

THE dumping of molten slag is one of the dramatic sights of the Pittsburgh district. It is a "must" for tourists to see. It is symbolic of the might and power of steel—and Pittsburgh is a steel city.

When slag can be dumped down a mountainside, subsequent handling is no great problem. But when a steel mill happens to be located in the heart of a city, where land is both scarce and valuable, slag disposal becomes a real problem. In some cases the molten slag is dumped temporarily into a pit near the mill. It is permanently disposed of later.

The molten slag holds no romance for the crane operator who must lift it from the pit for loading on cars. To him the slag means extreme heat, steam, gases, fumes and reduced visibility. Yet he must keep digging so that the pit will be ready for subsequent pours. Since steel mills operate continuously, the slag is poured almost constantly.

At the Pittsburgh works of the Jones & Laughlin Steel Corp., the Duquesne Slag Products Co. removes the slag and processes it for building block, highway surfacing materials and other uses. Operators of Duquesne's power shovel now work in an atmosphere of comfort and safety—and air conditioning (in the form of a Dravo crane cab cooler installed

directly over the operator's compartment) has made it possible.

Temperature outside the cab may be as high as 160 F, but inside the cab it is 80 F. The crane cab cooler removes dust, dirt and fumes from the air before it is delivered to the cab. A tired operator is not a safe operator.

Prior to installation of the air conditioning unit, two huge propeller-type fans were mounted on the front of the shovel, in an effort to blow away the fumes, dust and steam. They afforded some help, but their effectiveness, as can readily be appreciated, depended to a great extent on wind direction. And they didn't provide any relief from the excessive heat.

While the cab roof provided the only space that could accommodate the crane cab cooler, it was also an ideal location. It had several important advantages. An 8-inch duct was all that was needed to reach the air diffuser in the center of the ceiling. In this position, the three-directional diffuser delivers 400 cfm of air, the air actually "washing" the surfaces of the walls and floor of the cab.

It removes the heat that has been absorbed from the hot slag. The return air opening is located 12 inches

Continued on page 93

SHOVEL CAB COOLER (arrow) mounted atop operator's compartment holds temperature inside cab down to 80 F even though it may soar as high as 160 F just outside.





FROZEN MERCURY PATTERNS are lifted from the -125 F acetone bath in which they are stored prior to dipping them in ceramic slurries to form molds of the desired shape and size. When this process has been completed, the mercury is allowed to thaw and run out of the molds.

FROZEN MERCURY PATTERNS

. . . make possible castings of more intricate contour, superior finish and greater accuracy

ONE of the more recent applications of sub-zero temperatures to industrial processes is the patented "Mercast" process, in which mercury is frozen to produce intricate castings of high-temperature alloys that are difficult to machine.

The Tapco plant of Thompson Products, Inc., Cleveland, one of the largest Mercast licensees, has been using this process for about a year and a half under the name "Intricast." This frozen-mercury process permits the making of castings with contours so intricate they could not be made otherwise. And because a superior finish and dimensional accuracy are obtained, machining requirements are practically nil.

The process, as used by Tapco's metallurgical products division, em-

plays three refrigerated boxes—one for freezing, one for storing, and one for dipping. Two of these are tanks filled with acetone; the third box serves for forming ceramic molds around the frozen mercury patterns.

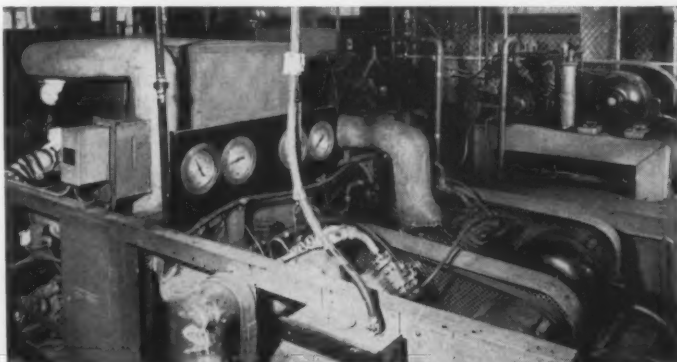
The acetone in the two tanks is cooled down to -135 F by use of a cascade system, in which the high

temperature unit cools the refrigerant of the low temperature unit down to -40 F, thus reducing the sensible heat of the final low-temperature refrigerant which is at -135 F after it enters the coil.

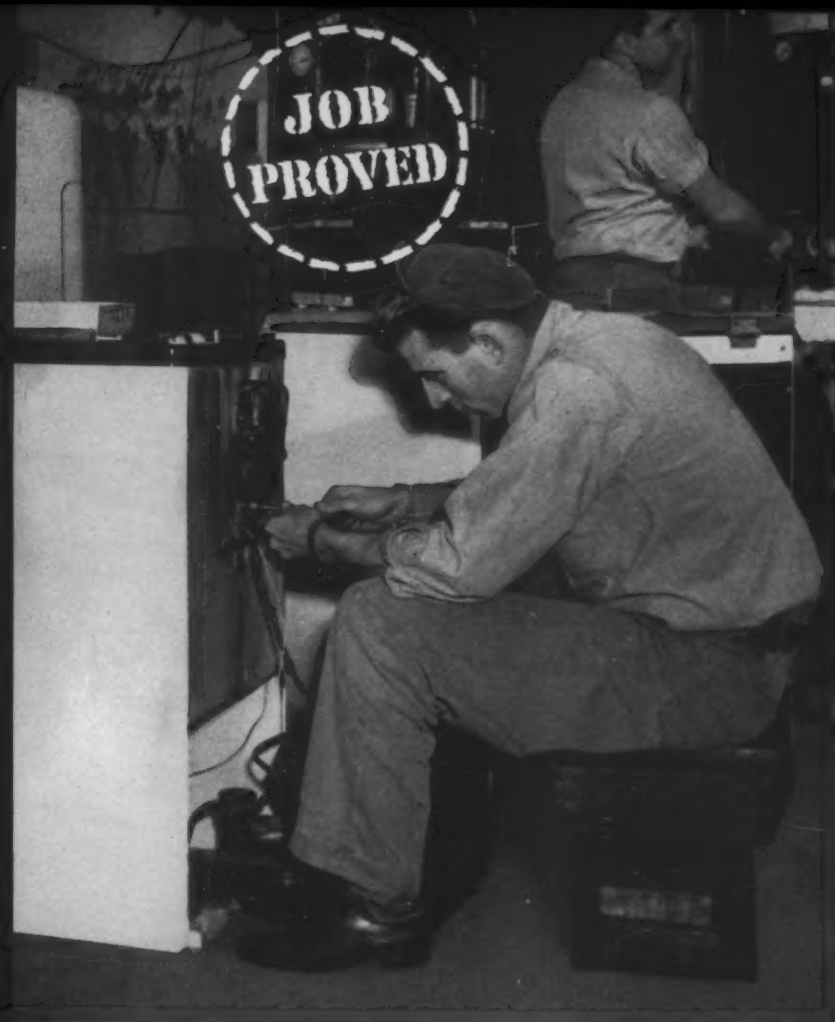
Acetone is used because it is non-freezing and provides a more rapid heat transfer than the surrounding air.

The sub-zero refrigeration is the critical ingredient until the completed

Continued on page 90



THESE ARE THE COMPRESSORS in the cascade system which cools the acetone baths down to -135 F. The high temperature unit cools the refrigerant of the low temperature unit down to -40 F.



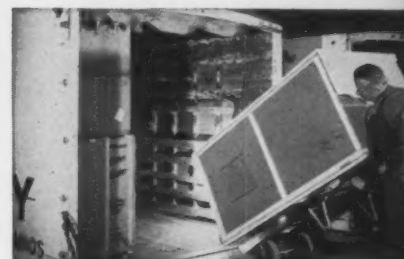
BY USING SUNISO REFRIGERATION OILS exclusively, Judson C. Burns, Philadelphia, has spared himself emergency calls due to oil trouble. This has left him free to continually take on new contract accounts.



HERMETICALLY SEALED COMPRESSOR at extreme left receives new charge of Suniso under pressure from 55-gallon drum on floor above. The charging board measures exact charge required, delivers it moisture-free and clean.



SOME REFRIGERATION OILS deposit wax in the capillary tubing of domestic units, requiring them to be dismantled and cleaned. Judson C. Burns prevents such costly callbacks by recharging exclusively with waxfree Suniso.



BECAUSE OF THE RELIABILITY of Suniso Oils, units like the Crosleys being loaded on Burns' truck for delivery remain trouble-free for years. In fact, some of his units have required only routine maintenance over a period of 24 years.

TROUBLE-FREE PERFORMANCE OF SUNISO OILS HELPS BUILD BIG SERVICE-SHOP BUSINESS

For 24 years, complete reliance on Suniso has paid off for the service department of Judson C. Burns, one of Philadelphia's largest distributors. Today Burns keeps a staff of 8 commercial service men, 8 shop service men, and 4 installation crews profitably busy. They are able to service nearly 1,000 commercial and industrial units a year because they are not handicapped by a multitude of callbacks. Some units, originally charged with Suniso, have been operating since 1926 with never a trip to the shop.

Service men everywhere have come to expect such performance of Suniso Oils. Suniso Oils flow back easily to the crankcase from the cold side of the refrigeration system. They do not deteriorate and turn to gum when mixed with Freon or other modern refrigerants. Being practically wax- and moisture-free, they do not clog or freeze in capillary tubes and expansion valves. For a free Suniso Specification Card, call your jobber or write Department RI-5.

SUNISO REFRIGERATION OILS

SUN OIL COMPANY, PHILADELPHIA 3, PA. • SUN OIL COMPANY, LTD., TORONTO AND MONTREAL



HERE'S WHAT

Military Applications of Refrigeration

AERONAUTICAL

| | |
|------------------|------------------|
| Aircraft Cooling | Aircraft Repair |
| Briefing Rooms | Clothing Storage |
| Control Towers | Engine Assembly |
| Parachute Drying | Weather Rooms |

CHEMICAL AND BIOLOGICAL

| | |
|-------------------------|---------------------|
| Animal Study | Bacteria Growth |
| Climate Rooms | Insect Colonies |
| Mold and Fungus Control | Radiological Agents |

COMMUNICATIONS

| | |
|---------------------|-------------------|
| Cryptographic Rooms | Equipment Storage |
| Instrument Repair | Message Centers |
| Radar Rooms | Radio Stations |
| Phone Exchanges | Teletype Centers |

MAPS AND PHOTOGRAPHY

| | |
|-------------------|----------------|
| Film Developing | Film Storage |
| Instrument Repair | Map Making |
| Map Reproduction | Photo Printing |

MARINE AND NAVAL

| | |
|----------------|------------------------|
| Cabins | Cargo Dehumidification |
| Crews Quarters | Fire Control Centers |
| Food Storage | Messrooms |
| Radar Rooms | Radio Cabins |
| Sick Bays | Water Cooling |
| Gun Turrets | Ready Rooms |

MEDICAL

| | |
|--------------------|-----------------|
| Convalescent Wards | Dental Clinics |
| Field Hospitals | First Aid Rooms |
| Morgues | Operating Rooms |
| Physiotherapy | X-Ray Cubicles |

REPAIR AND MAINTENANCE

| | |
|---------------------|---------------------|
| Bombsights | Cameras |
| Electronic Devices | Electrical Devices |
| Hydraulic Equipment | Optical Instruments |

SPECIAL ENCLOSURES

| | |
|----------------|----------------------|
| Blackout Rooms | Computer Rooms |
| Map Rooms | Record Vaults |
| Test Chambers | Underground Shelters |

TRAINING DEVICES

| | |
|-------------------------|------------------|
| Aircraft Identification | Blackout Gunnery |
| Film Laboratory | Navigation |
| Link | Torpedo |
| Submarine | |

WEAPONS

| | |
|--------------------|----------------|
| Ammunition Storage | Fuse Loading |
| Bacteriological | Military Tanks |

YOU CAN GET MILITARY BUSINESS

Camps or bases in your territory are a priority-proof source of sales and profits. If you're interested, now's your chance

ARE you passing up some good sources of additional refrigeration and air conditioning business that are practically right in your own back yard?

Before you give a quick "No" to that question, take a look around. Because if there are military establishments of any kind in your territory, and you haven't been trying to do business with them, you could very well be letting an important source of extra sales and profits get away from you.

We're not suggesting that you drop all of your present business, and rush right out to get on the military bandwagon. Not every refrigeration man has the experience, the engineering know-how, and the services available that the military is looking for, or needs. But if you believe that you do have something to offer, don't pass up the chance without giving it a good look-see.

Bases reopening across the country need dealer help to get idle refrigeration and air conditioning systems back in operation, to replace worn-out equipment and to install new

systems for projects of all kinds.

Almost all military agencies buy services, but the procurement manuals give scant attention or coverage to service contract opportunities. Your best bet is to contact the military installation nearest you. There are some in virtually every state.

Once you find out who's interested in the product or service you have to offer, keep in regular touch with the persons who do the buying or specifying of the equipment. All military installations buy some items locally. You can establish continuing personal contact with local procurement officers, and by-pass a good deal of the red tape that's inevitable in centralized procurement.

The best opportunities exist (1) where the deal is small; (2) where requirements are highly perishable; (3) where items are of the "house-keeping" variety; (4) where goods are of types not normally stocked by central procurement agencies. But give it a try even if you don't fit one of these cases. There's lot of variation in buying policy among the services and types of installations.

Local buying usually involves immediate service and delivery of the entire order, and you should be prepared to meet this condition on any business you try to track down. But keep alert for changes. As mobilization expands, procedures and policies will change and new problems will arise.

To get business like this, you'll have to learn whom to contact, or you're liable to drown in military channels.

In the Army and Air Force, the Corps of Engineers is responsible for designing and construction of new buildings. If the blueprints call for air conditioning or refrigeration, they handle it.

After the building is up, the Army Post Engineer or Air Force Air Installations Officer takes charge of these installations. However, if the job is big enough, it can revert to the Engineers.

To make firm contacts, you should get to know these Army and Air Force men and offer your help. These officers are usually short of skilled refrigeration and air conditioning men and you'll really get places if you're able to take part of the job of drawing up plans and specifications off their shoulders.

This will put them in a position to write tight specifications and will freeze out fly-by-night competition and allow reputable dealers to get a shot at the business.

Other valuable contacts for you are the Division and District officers of the Corps of Engineers and its mechanical engineers.

The Navy operates differently from the other services. Instead of working out of districts and divisions like the Engineers, the Navy sends out construction specialists from a base and these men remain on the job until their work is done. The Navy man to contact is the Public Works Officer at the main base.

A sidelight on defense work are the job opportunities in officer, non-commissioned officer and enlisted men's clubs. The groups are good prospects for packaged air conditioning, refrigeration and ice maker units. In the Officer's Club, the man to see is the Club Operating Officer. A good initial contact for the other two is the Special Services Officer, who oversees these activities and is in a position to know what they need.

HERE'S WHO

Check List of Principal Military Buying Offices

HERE is a list of the principal military purchasing offices throughout the country which buy refrigeration and air conditioning equipment, compressors, and replacement and repair parts and supplies:

Chief, Chicago Procurement Office, Corps of Engineers
226 West Jackson Blvd., Chicago 6, Ill.

Engineer Supply Officer, Columbus General Depot
U. S. Army, Columbus 15, Ohio.

Commanding Officer, Marietta Transportation Corps Depot
Marietta, Pa.

Commanding Officer, Chicago Quartermaster Purchasing Office
1819 West Pershing Road, Chicago 9, Ill.

Officer in Charge, Quartermaster Market Center
226 West Jackson Blvd., Chicago 6, Ill.

Commanding Officer, Detroit Arsenal
Center Line, Mich.

District Chief, Detroit Ordnance District
6301 West Jefferson Ave., Detroit 1, Mich.

Commanding Officer, Signal Corps Procurement Agency
2800 South 20 St., Philadelphia 45, Pa.

Bureau of Ships, Department of the Navy
Washington 25, D. C.

Bureau of Yards and Docks, Yards and Docks Annex
Washington 25, D. C.

Navy Purchasing Office, Department of the Navy
Washington 25, D.C.

Aviation Supply Officer, Aviation Supply Office
400 Robins Avenue, Philadelphia 11, Pa.

Commanding Officer, U. S. Navy Supply Depot
Mechanicsburg, Pa.

Yards & Docks Supply Officer, Yards & Docks Supply Office
U. S. Naval Construction BN Center, Port Hueneme, Calif.

U. S. Navy Ship's Store Office
29th and Third Ave., Brooklyn, N. Y.

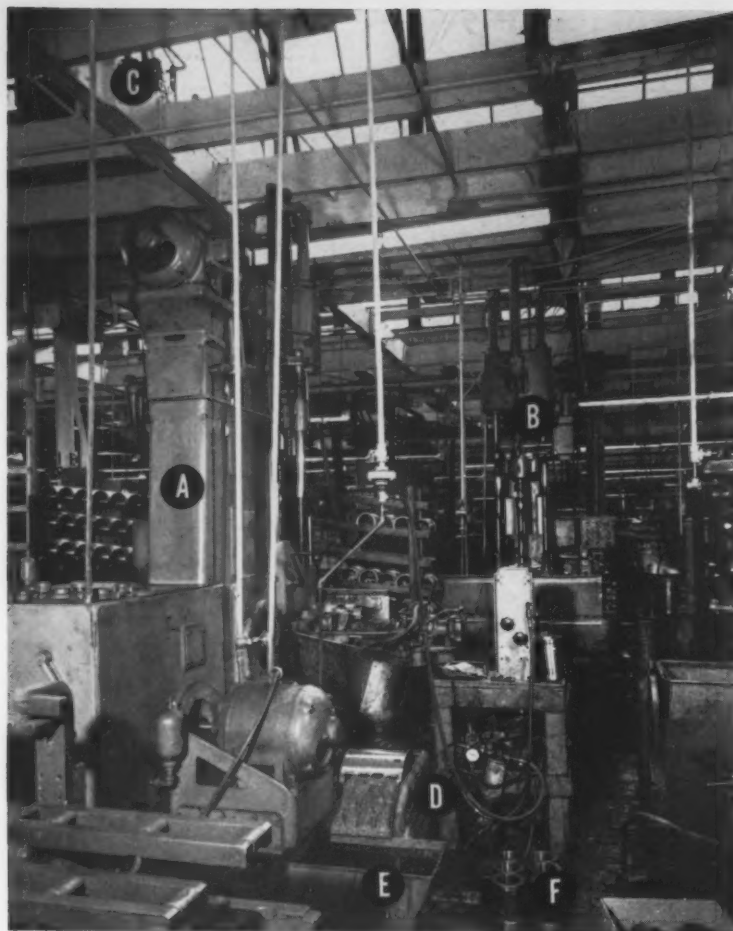
Headquartermaster, USMC
The Quartermaster General, Washington, D. C.

Procurement Division, Air Materiel Command
Wright-Patterson AF Base, Dayton, Ohio

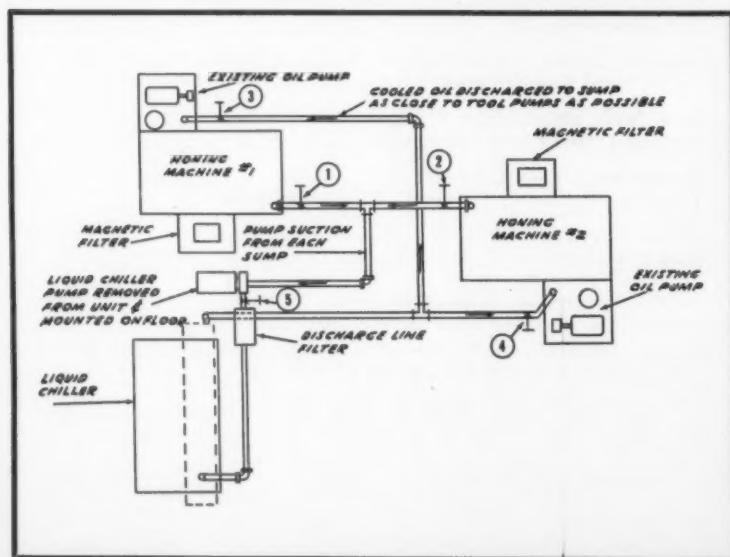
Don't overlook the local possibilities. Especially for smaller firms, they are in most cases a more likely source of business than Washington contact. Local officers can award substantial orders without special authorization, and with a minimum of red tape.

If you would like a list of the local military installations in your area, drop a postcard to the Editors and we'll send it to you.

The nearest field office of the U. S. Department of Commerce probably has a Government Procurement Manual which will also help you locate this information.



CROWDED CONDITIONS of this manufacturing plant made it necessary to locate the liquid chiller (C) for these two honing machines (A and B) on the overhead beams. The magnetic filter (D) picks up the metal particles from the oil which collects in the tank (E) while the honed cylinders (F) are set aside. The schematic diagram below shows how this effective system was hooked up.



COOLANT SPEEDS WAR

THE CHILLING of oils or other coolants to carry away the heat of friction from machine tools is a prime example of one of the more widely used applications of mechanical refrigerating equipment in the field of industrial production.

In plants all over America today, many machine tools are working "around the clock" and must be kept at peak efficiency. With the aid of refrigeration, not only are proper tolerances of metal maintained, but also machine tools can operate for longer periods of time without rest.

Thus the adequate removal of heat generated in such metal working operations not only lengthens tool life and lessens the required frequency of redressing but also makes possible production at higher speeds with greater precision.

A somewhat unusual installation of this type was made recently in the plant of Reo Motors, a large truck manufacturing firm in Lansing, Mich. This installation involved use of an Acme "Flow-Cold" liquid chiller to cool 40 gpm of kerosene from 90 to 70 F. This chilled oil was used to dissipate the heat generated in a honing operation performed on large steel cylinder sleeves for truck motors.

Because of the intense concentration of machinery in the plant, the liquid chiller had to be mounted on overhead girders some 15 feet above the floor. To further complicate the installation, the liquid chiller had to cool the oil supplied to two separate honing machines.

In the system that was devised for this installation, the pump of the liquid chiller unit was removed from the unit and mounted on the floor. This made it possible for the pump to push the oil upward to be cooled in the overhead unit, a much easier matter than pulling the oil up from

COOLING PRODUCTION

floor level which the pump would have had to do if it had been left mounted with the liquid chiller.

This set-up also made it possible to leave the oil pumps of the honing machines exactly as they were to continue their circulating action. In this way they can continue to service the machines in the event the cooling system should be temporarily shut down for any reason.

The coolant oil was taken from the sump of each honing machine through a loop rather than by cutting into the sump wall. With this arrangement it was necessary to install on each suction a check valve or foot valve to retain the oil in the line when the system is shut down.

In each suction line valves (see 1 and 2 on diagram) were installed to balance the flow of oil from each unit, as an assurance that equal quantities of coolant would be removed from each machine. This valving arrangement also makes it possible to isolate either machine for cleaning or maintenance purposes when necessary.

Each of the honing machines already was equipped with a magnetic filter to draw out the particles of steel which are deposited as a result of the honing process.

In addition to these magnetic filters, an additional filter was added to the discharge line. This enabled the oil to be satisfactorily filtered prior to entering the chiller, yet without creating any great restriction in the line.

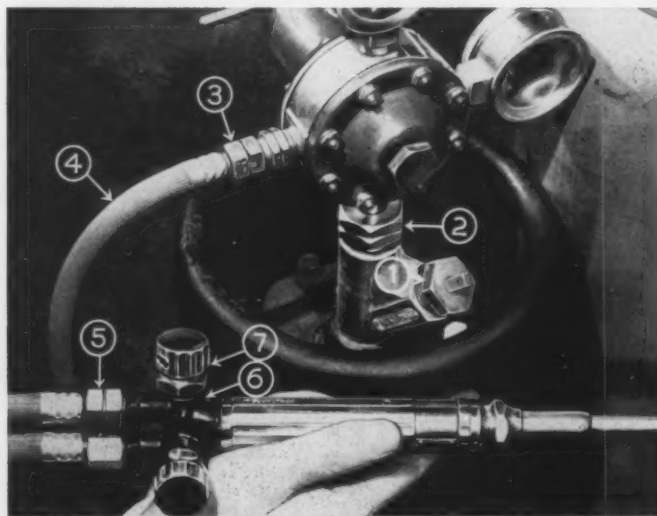
Additional valves (see 3 and 4) were installed in the discharge lines, again to enable either machine to operate independently of the other. Still another valve (see 5) was added to regulate the flow of the coolant through the chiller and thus determine the cooling range of the oil.

A 7-Point Test for Oxy-Acetylene Leaks

LEAKS in welding and cutting equipment are a hazard to the operator and the shop. Locate them with the 7-point search described here, then plug them up before they cause damage and injury. To make the tests you will need: a clean paint brush, cloth, bucket of water and a bar of lather soap. Most leaks occur at the connections and can be cured by tightening or replacement of defective parts.

Test the oxygen system first, closing the acetylene valve. Disconnect the acetylene hose and close the blowpipe acetylene valve. Turn on a few pounds of oxygen pressure and hold your finger over the end of the blowpipe. Then apply soapy water to the places indicated. The acetylene system is checked in the same way after disconnecting the oxygen hose from the blowpipe and closing the blowpipe oxygen valve.

1. **Cylinder valve stems.** If valve stem leaks, even after the packing nut is tightened, disconnect cylinder at once and return to supplier. While waiting for it to be picked up, keep it outside and tagged. Warn workers to keep away from it with cigarettes.
2. **Regulator-cylinder valve connection.** Close the cylinder valve and disconnect the regulator. Clean and examine all parts for damage. If cylinder connection or regulator is damaged, return to supplier for repair.
3. **Regulator hose connection.** Clean and examine connections after disconnecting hose. Replace damaged hose connections.
4. **Hose.** Check hose by running it through a bucket of water. Cut out defective sections and splice with hose coupling. Never use tape to patch hose.
5. **Blowpipe hose connection.** Shut off oxygen or acetylene at the regulator, remove blowpipe hose connection and clean it. Replace hose connection, if needed, but return blowpipe to supplier for repairs if the damage is on the blowpipe end.
6. **Blowpipe valve seat.** Take the valve apart, clean end of valve stem and seat of valve body. After reassembling, turn the valve on and off a few times before tightening the packing nut.
7. **Welding head connection.** Dismantle and wipe with a clean cloth. Leaks or damaged parts must be repaired.



Photo, Linde Air Products Co.

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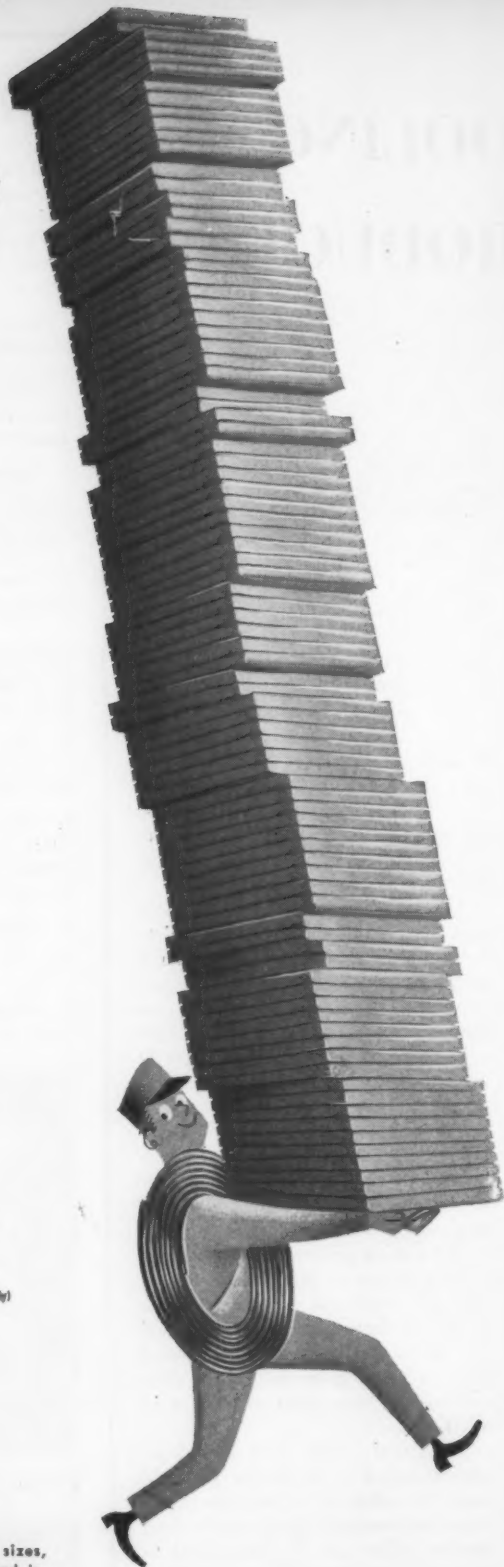
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MAY, 1951 • COMMERCIAL REFRIGERATION



Industrial Application Briefs

PHARMACEUTICAL PRODUCTION

RIGID humidity control is essential in work areas of pharmaceutical plants where capsules are filled with hygroscopic powders.

Both the medicinal powder and the capsule must be kept dry until the capsules have been filled and packaged. This is necessary so that the product will



be uniform and free from atmospheric contamination, and so that the capsules will not become tacky in handling. In one large pharmaceutical plant this dehumidification job is accomplished through use of a 150-hp centrifugal compressor and a series of lithium chloride dehumidifiers.

POWDERED METAL MANUFACTURE

SOME of the powdered metals used in the manufacture of cemented carbide products are hygroscopic in nature. In an uncontrolled atmosphere they pick up moisture from water vapor and from other



impurities in the air, becoming contaminated and gaining weight. One plant found that by holding temperature at 80 F and humidity at 35% this condition could be overcome. Temperatures are held constant within 1 F plus or minus, and humidities plus or minus 2½%.

TOOL AND GAUGE ROOMS

THE maintenance of close tolerances in precision manufacture is dependent upon the accuracy of gauges and standards. Air conditioning provides automatically the constant temperature necessary to preserve their dimensional exactness and the humidity control to prevent rusting and corrosion. In machine shops, for instance, it has been found that

some precision parts have been rejected when made on machine tools exposed to the sun at certain times of the day. Some parts cannot be made to the accuracy now demanded if atmospheric conditions are not constant during all of several days of manu-



facture. Gauges, also, are very sensitive to changes in conditions of temperature, humidity and cleanliness during their manufacture and use. Experienced gauge testers say that when the temperature of the gauge room varies more than 1 F they can detect it in the gauges. Tolerances are generally held to plus or minus 1 F and relative humidity within plus or minus 5%.

PRESS-FITTING OF PARTS

SUB-ZERO temperatures, through the use of industrial refrigerators, are used to assist the press-fitting of parts in various industrial applications having to do with such things as machined forgings and seamless tubing. Assembly time is speeded up, and rejections resulting from heating irregularities have been minimized.

By a combination of heating and cooling, the outer part is expanded (by heat) and the inner part contracted (by cooling). Experience has shown that by a combination of refrigeration and heat a more satisfactory press-fit is obtained without distortions. This is especially true of parts that vary in thickness



at different sections. Also, parts kept at moderate temperatures are much easier to handle than those kept at extremely high or low temperatures.

Parts treated by refrigeration can be slipped into place by hand, instead of by force, which often scratches or mars machined and highly polished surfaces. These scratches and mars are dangerous to the life of the part.

Industrial Application Briefs

POWDER AND EXPLOSIVES

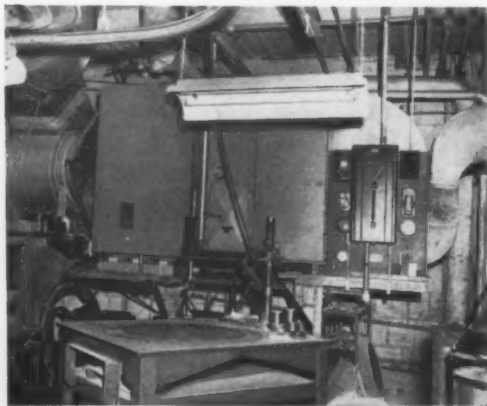
POWDER for explosive propellant charge in guns and projectiles requires control of both temperature and humidity during the loading process. Powder is hygroscopic and its moisture content determines the rate at which it will burn. Variations in the burning rate cause inconsistent performance of the guns or projectiles when they are used in actual combat. It is also important to maintain relative humidity at a uniform level high enough to minimize the danger from explosion of static discharges



of electricity. Temperature and humidity requirements usually vary and generally are set for each specific application according to the requirements of the manufacturer of the powder. Black powder for artillery primers must be dried so that the moisture content is below 1%, that uniform burning of the powder will result.

ABRASIVES MANUFACTURE

AIR conditioning plays an important part in the manufacture of abrasive wheels of the molded plastic type. Both temperature and humidity control are essential. The abrasive materials are hygroscopic and wide shifts in humidity affect the resulting mixture, causing variation in the quality of the finished products. Shifts in temperature cause changes in the bonding fluid, also affecting the quality of the finished products. In plants in this field, temperatures of 70 F to 72 F and relative humidities of 45 to 50% have been found most satisfactory. It was



found that when temperatures rose above this point the bond became too soft to work. Without air conditioning, it was necessary to suspend operations until proper conditions could be restored, or continue manufacture with a resultant inferior product.

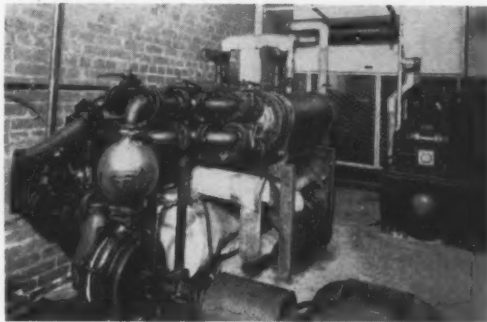
SPECTOGRAPH ROOM

INSTALLING a 3-hp packaged air conditioner (with a price tag of about \$900) in the spectograph room of American Locomotive Co. developed into a \$4000 job for a Syracuse, N. Y., contractor.

The added cost resulted from the elaborate control and instrumentation system which was required to maintain both temperature and humidity within the precise tolerances demanded. The proper arrangement of pneumatic controls, positive steam type humidifiers, motors, valves, and recording instruments did the job of holding the desired conditions in this room where metals are tested for flaws or weaknesses.

COOLING ANODIZING SOLUTIONS

IN THE relatively new protective coating process of aluminum anodizing, great quantities of direct current electricity are consumed. The high current densities impressed on the solution would, if some means for cooling were not provided, raise its temperature above the optimum point for successful anodizing.



Water is the simplest medium for transferring excess heat from the electrolyte. With the chromic acid method in which the electrolyte is maintained at 90 F an evaporative cooler can usually do the job. In the process using sulfuric acid, however, the electrolyte should be held at about 70 F, and in this case mechanical refrigeration equipment is required.

DRAFTING ROOMS

DRRAFTING rooms are air conditioned for both precision manufacture and work efficiency. Designs which are pictured on drawings must be drawn to scale, and in some plants either the drawings or reproductions of them are used as templates for the manufacture of working tools or parts. Here temperature and humidity control prevent variations in size and distortion in shape. Concerning work efficiency, draftsmen have been proved to turn out more and better work where uniform air conditions are maintained, and where perspiration and dirt are not permitted to affect the drawing. Conditions in drafting rooms are generally kept at normal comfort levels, usually 80 F and 50% relative humidity, with normal variations.

Industrial Application Briefs

METAL MOLDING

AN air conditioning system for humidity control is a must in the powdered metal department of the Tapco Plant of Thompson Products, Inc., Cleveland. The system is used to insure dryness of the atmosphere in order to prevent oxidation or corrosion of the fine metal particles that would weaken the completed parts, which are highly critical components for jet aircraft engines.

Two rooms are involved. The preparation room is 24 x 33 feet, the molding room approximately 18 x 33 feet.

The conditioning system is designed to maintain humidity at less than 40%. The equipment consists



of a 20-hp condensing unit operating at 600 rpm, and a six-row direct expansion blower coil. The latter contains a double row steam coil which is used exclusively for tempering the outside air in the event of very cold weather. Room temperature and humidity conditioning are controlled by modulated wet and dry bulb controllers.

The supply duct work is wrapped with glass fiber insulation. A ceiling type air diffuser is located in each room.

Sheet metal walls of the department were insulated by coating them with mastic and then spraying them with dry wood pulp until a 1-inch layer of insulation had been built up.

FLUORESCENT LAMP TESTING

A LOT of "midnight oil" will be burned in turning out U.S. armaments for defense—and many plants will get their light from fluorescent tubes which will have been improved through the application of refrigeration.

Makers of fluorescent lighting equipment found that when these tubes were exposed to low temperatures during use operational difficulties frequently developed. To lick this problem, one manufacturer contracted for several special refrigerated cabinets

measuring $4\frac{1}{2} \times 4\frac{1}{2} \times 6$ feet and insulated with fiber glass in which the tubes could be stored at temperatures as low as -60°F for varying periods of



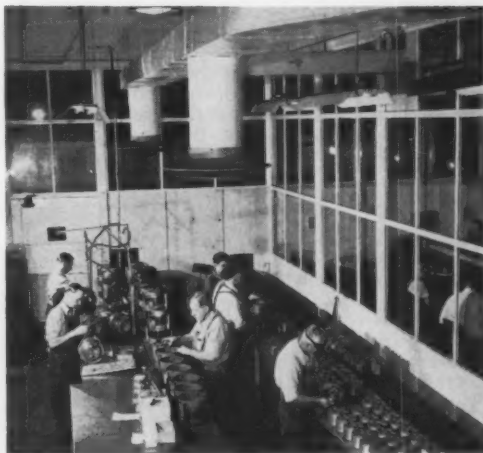
time. After such exposure, the tubes were studied in the laboratory and the failure problem was remedied.

The cabinets were designed and constructed by Ramsey-Bennett Co., Cleveland cooling contractor.

PRECISION ASSEMBLY OPERATIONS

EXCESS humidity, perspiration and air-borne dirt can raise havoc in precision instruments. Such devices as fine meters, gauges, clocks and watches are most vulnerable to this type of damage during assembly operations. A speck of corrosion on a needle-pointed pivot, a sweaty fingerprint on a delicate spring, a few flecks of dirt or lint on a tiny gear train cause rejects of expensive finished parts.

Air conditioning reduces these losses to a minimum by removing the causes. Humidity control re-



moves excess moisture, and this together with temperature control and proper air circulation keeps operators' fingers dry. Filtering removes dust and dirt from the air. Additional benefits of air conditioning are improved morale among operators and increased individual productivity.

Military Application Briefs

EQUIPMENT REPAIR

WITH the high rate of attrition of modern war, the ability to keep equipment repaired and in fighting trim parallels in importance the actual production of equipment. Air conditioning helps to keep dust and humidity under control in instrument repair rooms and thus makes it possible for delicate instruments to be repaired and calibrated under the most favorable conditions.

PARACHUTE STORAGE

PARACHUTES must be perfect if they are to be any good at all. It is imperative, therefore that they be processed and kept under carefully controlled atmospheric conditions. Mold and rot, the enemies of all fabrics, are prevented from attacking parachutes by means of air conditioning and refrigerating systems, installed in drying towers and storage rooms.

ENGINE TEST BUILDINGS

AIRCRAFT engines must be tested under constant conditions of air temperature. Located at air bases throughout the country are special rooms for the testing of such engines after they have been repaired. Here refrigeration helps to provide air cooling for engine carburetors.

LINK TRAINER BUILDINGS

IN air schools, fledgling pilots learn to fly with the aid of the Link Trainer, a device which simulates blind flying conditions. Cadets enter the Trainer and go through the complete cycle of a flight from takeoff to landing, without actually leaving the ground. Many of these flight training rooms are air conditioned to reduce high internal temperatures in the Trainers.

WEATHER FORECASTING

MILITARY meteorologists use refrigeration equipment as an aid in weather-forecasting operations. Equipment sent up by balloon to the cold reaches of the upper air is checked and calibrated in low-temperature test cabinets mounted on trucks for use in the field. When the instruments descend, recorded conditions are reproduced within the cabinets, and thus the findings are double-checked.

CELESTIAL NAVIGATION

IN special rooms, with revolving domes simulating the heavens, our air navigators study celestial navigation and make synthetic flights guided by the stars and planets. Control of temperature is necessary to insure the exactness with which the instruments in celestial navigation towers must respond. Variations of two or three degrees may produce false readings. Dust particles or high humidity can cause the controls to be inaccurate or fail to operate.

CLOTHING STORAGE

OUR armed services, both at home and abroad, maintain refrigerated storage facilities for the wool and fur flying suits worn by crews during their flights. This and other essential clothing must be protected, not only from vermin but from extreme conditions of temperature and humidity.

PLOTTING ROOMS

PLOTTING rooms of combat information centers are usually of the blackout type and are occupied 24 hours a day. They are air conditioned to make working conditions tolerable.

PORTABLE REPAIR UNIT

UNITS serving as aviation repair shops may be flown by transport planes to remote points. Relatively small when telescoped, opened up and ready for use they contain all the equipment necessary to repair and calibrate bombsights and other instruments. Air conditioning equipment is an integral component of these units.

ARMAMENT INSTRUMENT INSPECTION

IN buildings, trailers, and portable houses where armament instruments are inspected and adjusted, air conditioning is necessary to eliminate moisture, dust, and temperature variations, which may cause inaccurate calibration and impair precision.

WARSHIPS

ABOARD the Navy's warships, air conditioning removes powder fumes from gun turrets and helps to maintain the high efficiency of gun crews. In addition, air conditioning protects powder from rapid deterioration in the powder magazines and provides a vitalizing atmosphere in fire-control stations and first-aid rooms.

Physical efficiency and mental alertness are maintained aboard fighting ships through the air conditioning of sleeping quarters and other living and working spaces. Here again temperature and humidity control promotes the physical efficiency and morale of the fighting man through protection of his environment, his food, and his weapons. The debilitating influences resulting from loss of sleep in hot quarters are removed, and delicate equipment and materials are preserved from deterioration in extremes of temperature and humidity.

SUBMARINES

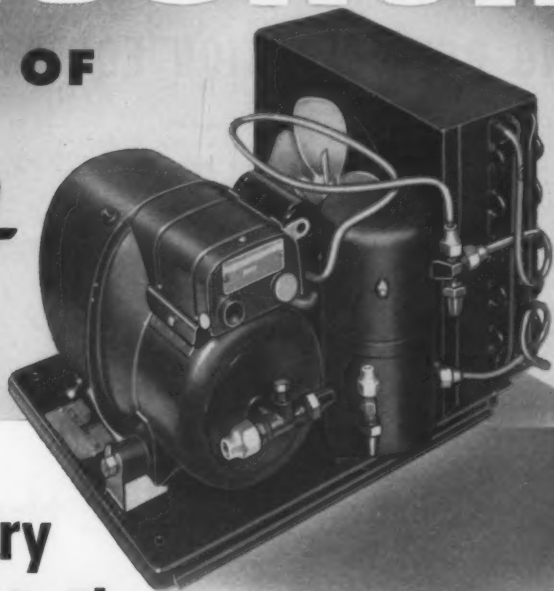
SUBMARINES are largely dependent upon air conditioning for both cruising range and efficiency. Without this vital means of temperature and humidity control, these vessels could not remain submerged for any extended period. Air conditioning serves not only to maintain but to increase the human efficiency so necessary to the effective employment of this important naval weapon.

HOSPITAL SHIPS

THE air conditioning of hospital ships is particularly important because the sick and wounded must be given every opportunity for recovery. High temperatures and high humidities have been found to be distinctly detrimental to a damaged human system and to make the road to recovery more difficult and hazardous. The possibilities of infection and reinfection are minimized in controlled atmospheres provided through air conditioning installations.

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When your Air Conditioning or Refrigeration equipment needs servicing, call Conditioned Air Corporation, Carrier distributor since 1933. Phone 89-2461.

Yours for SERVICE

C. W. SWAIN
SERVICE MANAGER

CWS:O

Carrier AIR CONDITIONING AND REFRIGERATION
Conditioned Air Corporation, allied with Alexander Oita Associates, Inc., Plumbing and Heating, Miami, Florida

SERVICE

FRIENDLY, INFORMAL letters like this have been instrumental in boosting this firm's service contract business to more than 33% of its total volume.

AN EFFICIENT, well managed and profitable service department is important to a dealer's overall operation at any time, but with new equipment becoming more difficult to get, it becomes even more important.

A good service operation, when you come right down to it, usually is a combination of three things: a good plan, sales promotion and elbow grease. That combination has doubled business volume and reduced overhead about one-third for Conditioned Air Corp., Miami, Fla., cooling contractor.

Conditioned Air's service operation, put into effect under the direc-

tion of Chris W. Swain, service manager, during the 1949 season, is built around a three-way program. Here's what was done: (1) A new, customer-appealing Maintenance Agreement was drawn up and vigorously sold, (2) Sales promotion and direct mail for service business was organized and put on a scheduled basis, and (3) Service department and stock room procedure was overhauled and new controls instituted.

"There were 15 persons employed in the service department and stock room when we started the program", Swain says. "At the present time we have 10 persons in the same depart-

ment, and are doing twice the volume of business.

"Our percentage of call-backs, under the new program, is less than 1%; previously it had been as high as 47%. We're quite proud of our low percentage of call-backs—and it is paying dividends in customer goodwill."

Swain's staff includes six service men operating from trucks ("I could squeeze another 10% on volume with the same crew", he says), one man operating the warehouse and stock room, and two girls in the office. "I am fortunate in having all top-notch personnel in my department, both as

CONTRACTS MUST BE PROMOTED

A sound program of maintenance agreements can be the mainstay of any service department, but such a plan can't realize its full potential unless it is actively promoted. Here's how one dealer does it

to service mechanics and the inside personnel," he declares.

Conditioned Air offers its customers three types of service contracts: (1) A standard service agreement, (2) A new room cooler unit contract being put out on an experimental basis at present, and (3) The maintenance agreement which was a basic part of the reorganization program.

The standard service agreement is the usual inspection and oiling contract, which is usually with a filter replacement arrangement. "We do not push the straight Service Agreement as I personally do not consider it the answer to maintenance," Swain explains.

The room unit service contract is a relatively new thing with the company, and Swain explains that a few are being put out on an experimental basis, since "they are apparently what a lot of our customers want." In general, the contract on room units covers the same services as the principal Maintenance Agreement.

"The Maintenance Agreement is our mainstay," Swain says. "I believe it is the answer to a profitable operation for us, as well as the best protection for the user of refrigeration or air conditioning equipment."

The agreement requires Conditioned Air to furnish all labor and material necessary to service and maintain the specified equipment; inspect the equipment periodically and perform service operations listed on a Service Check List and Report;

furnish the customer with copies of the Report and advise the customer when the equipment is shut down, started up or repaired; instruct the customer in proper operation of the system; and submit to the customer each year a survey of the effectiveness of the system with recommendations for needed improvements, if any.

This gives the customer what amounts to an "insurance policy" against unexpected shutdowns and repair bills. On his part, the customer is required to operate the equipment

as instructed; extend all possible facilities of personnel and premises to the dealer's service mechanics; permit only the dealer's men to work on the equipment; and notify the dealer promptly of any unusual operating conditions. Certain extras in the way of materials and work are the customer's responsibility, but the basic repairs and parts must be furnished by the dealer.

For its own protection, Conditioned Air inspects the customer's equipment and makes sure it is in good running condition before entering into any maintenance agreement. There is a space in the contract for listing of all equipment which is not to be included in the agreement until it has

Continued on page 80



COMPACT ORGANIZATIONS are most efficient, believes service manager Chris Swain, who is shown here directing his tightly-knit office staff consisting of Miss Lucile Rogers at the phone and Mrs. Mary Eastman at the inventory file.

about PEOPLE

Kramer Trenton Co. has announced the appointment of **David A. Nurse**

to the staff of Robert B. Holland Co., Kramer's West Coast representative with offices in Los Angeles. Nurse will direct the sales activities of the Holland company's branch office in San Francisco. Nurse has had wide experience with both ammonia and Freon air conditioning and refrigeration equipment, including some four years with the York distributor in San Francisco.



Rodney F. Lauer, one of America's pioneers in the development of high altitude chambers and all-weather rooms for armed forces, has been named vice president in charge of engineering and research by York Corp. Lauer, who has been with the



air conditioning and refrigeration firm since he received his degree in Mechanical Engineering at Cornell University in 1930, had been managing York's Pacific District since 1944.

Ken L. Crapeau, export sales manager of Airtemp Div., Chrysler Corp., has been elected chairman of the foreign trade committee of Air Conditioning & Refrigerating Machinery Association. **C. E. Renninger**, sales manager of York Corp.'s international division, has been elected vice chairman. Crapeau succeeds W. J. Neylan, supervisor, commercial refrigeration, international division, Servel, Inc., as head of this group, which is comprised of

the export representatives of principal manufacturers of commercial and industrial refrigeration and air conditioning machinery.

McQuay, Inc. has announced the appointment of **V. D. Dyer** as its refrigeration and automatic ice maker representative in the Seattle, Wash., area. Dyer will cover both states of Washington and Oregon, ten counties in Idaho, and the province of British Columbia, Canada. He has been in the field of refrigeration for many years, associating himself with manufacturer's representatives and West Coast jobbers. Dyer will make his headquarters in Seattle.



Sam Kern in New York City and **William Wolff** in Dallas, Tex., have been added by Perlick Brass Co. to its staff of representatives. Kern will be an exclusive representative throughout New York State, while Wolff will serve the firm exclusively in all of Texas.

O. P. Proudfoot has been appointed manager of the Cleveland district sales office of Cutler-Hammer, Inc., according to announcement by P. S. Jones, vice president in charge of sales. Proudfoot has been with Cutler-Hammer since 1928, and most recently was a member of the Buffalo district sales staff.

Two officials of Carrier Corp. have been appointed to administrative posts in the Defense Production Administration in Washington, and are now on leave of absence from the Syracuse, N. Y., air conditioning firm.

George N. Lilygren, a Carrier vice president, has been named one of three top assistants to the Director of Program and Requirements. Appointed comptroller of Carrier in 1947, Mr. Lilygren later became a vice president and head of the co-



G. N. Lilygren



D. W. Hoppock

ordinating committee of the corporation. **David W. Hoppock**, formerly product manager of commercial refrigeration for Carrier and more recently dealer sales manager for the New York, New Jersey and Connecticut area, is now serving as special assistant in the office of the Administrator of the Defense Production Administration.

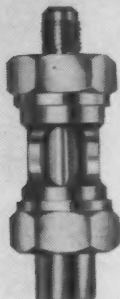
F. J. Van Poppelen, Montclair, N. J., has been named general manager of the General Electric Co.'s air conditioning department with headquarters at Bloomfield, N. J. Van Poppelen has been assistant general manager of the department since the first of



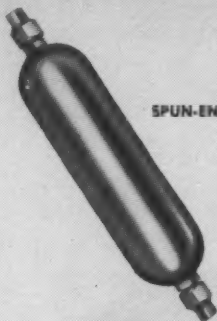
the year and had previously been manager of manufacturing. Prior to joining General Electric in 1949, Van Poppelen was vice president of Hupp Corp. of Cleveland, Ohio.

Charles R. Neeson, refrigerating consultant for Airtemp Div., Chrysler Corp., was honored by the Cincinnati section of American Society of Refrigerating Engineers recently at a dinner meeting in Cincinnati, Ohio. Paul B. Christensen of New York, president of the society, conferred the grade of Fellow of the Society on Neeson, in recognition of his many accomplishments in the refrigeration and air conditioning industry. Neeson is the forty-first, out of a membership of more than five thousand, to receive this honor.

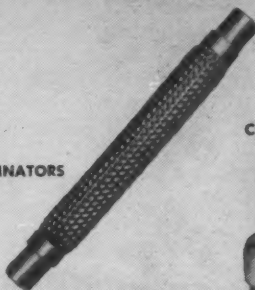
FUL-VU SIGHT GLASSES



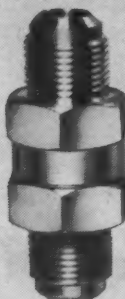
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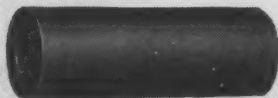
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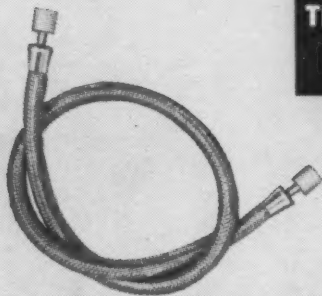
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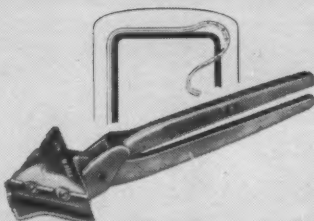
SPONGE RUBBER TUBING



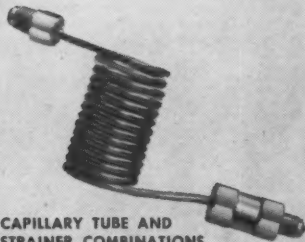
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Above: In this central control room at NACA's Lewis Flight Propulsion Laboratory, refrigeration for wind tunnels and test chambers is directed and modulated. Below: An engineer at the Naval Ordnance Laboratory studies the effects of a -65 F temperature on one of the new Navy mines undergoing test.



Below: Testing instruments used in the Wright Field Environmental Laboratory must be able to stand up under sub-zero temperatures. Here the sensing units of a dewpoint indicator are subjected to extremely cold weather tests for calibration purposes and their reaction noted on the indicator outside.



Research

America's security depends on superiority in air power—
in quality. To hold this lead
search under all types of sit-
—activities dependent in g

AIR conditioning is big business—important business—at the gigantic government-sponsored research and test laboratories throughout the country which are instrumental in the development and approval of virtually every type of equipment used by America's armed forces, from mosquito netting to jet bombers.

Without the enormous quantities of closely conditioned air produced at these laboratories each day it would be impossible to carry on this vital research which is needed to make the nation's fighting men the best equipped in the world.

Three such typical laboratories are the Naval Ordnance Laboratory at

Below: An aircraft component undergoes a test in the Wright Field Environmental Laboratory, at a temperature of 80 F with 98% humidity. During World War II, more planes were lost in actual combat.



Relies on Refrigeration

gely on maintaining its so much in quantity as ship requires constant related weather conditions part upon refrigeration

White Oak, Md.; the Lewis Flight Propulsion Laboratory of the National Advisory Committee on Aeronautics at Cleveland, Ohio; and the Wright-Patterson All Weather Laboratory at Dayton, Ohio.

The temperature simulation chamber at the Naval Ordnance Lab is a gleaming stainless steel room 30 feet long, 8 feet wide, and 8 feet high. It is capable of handling a full size torpedo and subjecting it to temperatures ranging from 200 F. to -100 F, with any percent humidity required. Six compressors and 10 pumps located in the basement of the laboratory are required to maintain these conditions.

The chamber received its first real workout recently when a new Navy mine was ready for pre-production tests. The Navy had to be sure before ordering production of this mine that it would do its job without fail even after riding for hours under the belly of a plane or being stored for long periods in sub-zero temperatures.

When the low temperature run was completed the mine was then rolled out and plunged into a nearby tank of sea water where the icing effects could be studied to make sure that no ice clogs or stiffened parts would affect the mine's operation when dropped from the cold upper stratosphere into the ocean.

This test was typical of those which will be conducted at these new research facilities so that the Navy can be sure its ordnance will function properly under all possible conditions before releasing it for operational use.

Far more elaborate in scope is the All-Weather Lab maintained at

Wright-Patterson Air Force Base. The largest and most complete environmental test facility in the world, this lab can produce any type of weather found anywhere on the globe and simulate altitudes up to 150,000 feet.

Temperatures ranging from 125 degrees below zero to 250 degrees above zero, relative humidities from 2 to 100 per cent, sunshine, rain, snow, sand and dust storms and even salt fog can be created at will in the various testing chambers.

The refrigeration system supplying low temperature brine for cold weather testing was engineered, manufactured and installed by Carrier Corp. The heating, cooling, humidification and dehumidification equipment is operated by Carrier for the Air Force.

Three centrifugal refrigerating machines are arranged in a three-stage system using Freon-12 to provide the necessary cooling capacity to pull methylene chloride brine down to -125 F. or below. The high stage

the humidity chamber of the Wright Field relative humidity. The Air Force estimates that high equipment failures than were shot down

Below: An engineer checks on the condition of an aircraft instrument being exposed to -65 F in the All-Weather test chamber at Wright Field. Eight panes of insulating glass in the window caused the blurred reflection. The new test facilities enable testing at temperatures from -125 to 250 F, 2% to 100% humidities.



machine is powered by a 400-hp motor operating at 6900 rpm, the intermediate stage machine by a 250-hp motor at 7200 rpm, and the low stage machine by a 150-hp motor at 4800 rpm.

There are two independent brine circuits, one of which is kept constantly at ultra-low temperatures. The other provides brine at a minimum of 30 F. for the other test chambers. In both circuits the brine is dyed with red oil so that any leaks will be quickly apparent.

The low temperature brine is piped

to a 30,000 gallon storage tank made of inconel metal, a nickel steel alloy, which is covered with 12 inches of insulation. Controls are so arranged that the storage tank can carry the entire load for the testing chambers, can assist in meeting the load, or can be recharged while the refrigeration plant is meeting the chamber load demand. Temperature of brine in the tank is never allowed to rise above -80 F.

With this storage arrangement, the refrigeration plant can be shut down for long periods and turned on to

provide for special low temperature requirements, according to the testing schedule, or to recharge the tank.

As in the Naval Ordnance Lab, the prevention of equipment and material failure as a result of the widely varied climatic and environmental conditions imposed by global operations is the primary aim of the Wright-Patterson test facilities.

During World War II, the Air Force was plagued both on the ground and in the air by equipment failure due to material deterioration. High

Continued on page 80

Here's What an All-Weather Laboratory Uses

Typical of the extent and variety of tests to which aircraft equipment and components are put to determine how they will stand up under actual flight and weather conditions are the following facilities now in use at the Wright Field Environmental Test

Low/High Temperature-Altitude Cabinet

Size: 48" x 42" x 36"; Door Size: 48" x 42".
Temperature Range: -112° to +250° F.
Cycling Conditions: Yes.
Altitude: 156,000 feet.
Duration of Runs: Unlimited.
Remarks: Reach-in type.

Low Temperature Test Chamber

Size: 84" x 84" x 104"; Door Size: 76" x 80".
Cycling Conditions: +80 to -112° F.
Altitude: Yes.
Temperature Range: None.
Duration of Runs: Unlimited.
Remarks: Expect long periods of uninterrupted operation.

All Weather Low/High Temperature Humidity

Size: 10' x 10' x 8'; Door Size: 30" x 77".
Temperature Range: -112° to +160° F. Relative humidity atmospheric to saturation from +40° F.
Cycling Conditions: Automatic control for high or low temperature.
Altitude: None.
Duration of Runs: 0 to 30 days, dependent on test.

Sand and Dust Chamber

Size: 84" x 84" x 104"; Door Size (total): 76" x 80" (double).
Temperature Range: 70° to 185° F.
Cycling Conditions: Cycling conditions permitted throughout wide range with automatic recorded controls.
Altitude: Ground level.
Duration of Runs: 24-hour maximum if required.
Remarks: This facility is capable of generating, maintaining and recording sand and dust conditions which will be representative of those encountered throughout the world.

Fungus Chamber

Size: 84" x 84" x 104"; Total Double Door Area: 76" x 80".
Temperature Range: 70° to 120° F.
Cycling Conditions: Permissible for both temperature and relative humidity.
Altitude: Ground level.
Duration of Runs: 14 to 28 days (or longer if necessary).
Remarks: Walk-in type of facility. Will accommodate larger types of equipment. Has indicating and recording type controls.

Humidity Chamber

Size: 84" x 84" x 104"; Total Double Door Size: 76" x 80".
Temperature Range: 41° F. to 185° F. 30% - 100% controlled.
Cycling Conditions: Cycling conditions permissible, automatically controlled and scheduled by electronic instruments.
Altitude: Ground level.
Duration of Runs: One to 24-hour periods, repeated dependent upon test requirements.
Remarks: Incorporates entrance lock, walk-in type test area, suitable for conducting tests on larger items of equipment.

Arid Chamber

Size: 84" x 84" x 104"; Total Double Door Area: 76" x 80".
Temperature Range: 40° to 220° F.
Cycling Conditions: Cycling conditions of temperature permissible.
Altitude: Ground level.
Duration of Runs: One to 24-hour cycles in periods up to one month.
Remarks: All conditions of humidity, temperature as indicated above are automatically indicated, recorded and scheduled. Chamber will accommodate larger items of equipment.

Low Temperature-Altitude Chamber

Size: 55" x 60" x 120"; Door Size: 42" x 59".
Temperature Range: +40° to -112° F.
Cycling Conditions: Yes.
Altitude: To 55,000 feet.
Duration of Runs: 0 to 7 days, dependent on requirements.
Remarks: Ram air system with control dewpoint, 140 hp drive, variable speed 560-9000 rpm.

Sun and Rain Chamber

Size: 84" x 84" x 104"; Total Double Door Area: 76" x 80".
Temperature Range: 70° to 120° F.
Cycling Conditions: No cycling contemplated. Each condition run independent of the other. Could be cycled if required.
Altitude: Ground level.
Duration of Runs: One to 250 hours.
Remarks: Facility of walk-in type, with ultraviolet, infra-red light sources, rain nozzles for conditioning of chamber. Will accommodate small, medium, and large items of equipment. Ultraviolet - 2800 to 7600 Angstrom Units. Infra-red - 3800 to 30,000 Angstrom Units.

NEWS

OF THE INDUSTRY

KOCH COMPANY ADOPTS NEW NAME

The name, "Koch Refrigerators, Inc.," has been legally adopted as of April 1 as the new designation for the North Kansas City manufacturers of commercial refrigeration known to the trade as Koch Refrigerators, a Division of the Koch Butchers' Supply Company.

Millard Mayer, president, in announcing the change in name, stated that the firm's entire facilities have been devoted to the manufacture of refrigerated cabinets and display cases since Jan. 1, 1950. The shifting of sales volume away from butcher supplies to refrigeration, keeping pace with the development of modern refrigeration, has led the company to this logical change in policy and name, he said.

Started in 1883 as a butchers' supply company to serve the first large scale packing houses built in Kansas City, Koch has always specialized in the design and manufacture of refrigerated fixtures.

ASHVE JULY MEETING IN PORTLAND, ORE.

Semi-annual meeting of American Society of Heating & Ventilating Engineers will be held July 2-4 at the Hotel Multomah, Portland, Ore. Nine technical papers will be presented at the meeting's three sessions.

NEW REMA MEMBER

Sub-Zero Freezer Co., Inc., Madison, Wis., has recently become a member of Refrigeration Equipment Manufacturers Association. W. F. Bakke, president, is official representative to REMA. The company manufactures food freezers, milk coolers and special equipment.

NOW BUSH V. P.



CECIL BOLING has been elected vice president and general manager of Bush Mfg. Co.

* * *

BOLING NAMED BUSH VICE PRESIDENT

Cecil Boling, associated with Bush Mfg. Co. for the past 11 years, has been elected vice president and general manager of the company, effective April 1.

During the time Boling has been connected with Bush, he has acted as sales representative in its eastern territory, operating through his own organization, the Cecil Boling Co., with headquarters in New York City.

Following graduation from Massachusetts Institute of Technology in 1932, Boling spent two years with Jackson & Moreland, engineers, in Boston. His next seven years were spent with Melchior, Armstrong & Dessau Co. of Ridgefield, N. J., where he became vice president in charge of U. S. operations.

In 1940 he started the Cecil Boling Co. as engineers and sales agents for Bush, and in 1945 he organized Heat-X-Changer Co., of Brewster, N. Y., an organization which sold products closely allied with the Bush line. Active in ASRE, Boling is presently a member of the standards committee of that society.

SERVEL WILL OFFER U.S. "ELECTRIC" LINE

Servel, Inc., announced recently that it will offer for sale in this country the electric absorption-type refrigerators which were previously made for export markets only. The company's principal product has been gas-operated absorption refrigerators, and kerosene models for use where gas service was not available.

W. Paul Jones, Servel president, said that the electrically operated units were being introduced to strengthen and support the position of the absorption refrigerator through larger volume and lower prices. Because of material shortages, production of electric models will necessarily be limited for the present.

The electric line will include the same eight sizes as are now in the gas line, ranging from 6 to 11½ cu. ft. capacity. Shipments to domestic markets will start around the middle of May.

ACE CABINET CORP. OFFICES MOVED

Sales and executive offices of Ace Cabinet Corp. have been moved from 110 E. 42nd St., to 1457 Broadway, New York City, reports Henry S. Robinson, national sales manager. Main factory is in New Bedford, Mass.

RECO TO MAKE ICE PLANTS FOR ARMY

Reco Products Div. of Refrigeration Engineering Corp., was recently awarded a contract for the manufacture of 35 ice plants of one-ton daily capacity by the Army Engineers. These are self-contained plants, refrigerated by means of a gasoline engine driven Freon condenser. The plants are skid mounted and shipped complete.

REMA REPORTS 68% SHOW SPACE SOLD

With the 7th All-Industry Show still several months away, already 43,672 sq. ft. of the available 64,000 sq. ft. of space has been purchased by 146 exhibitors, REMA headquarters reports. This is a total of 68% of the exhibit space available. REMA reports, however, that plenty of choice space still is left.

Recent new exhibitors who have contracted for space at the Show include:

Allis-Chalmers Mfg. Co., Allin Mfg. Co., Harry Alter Co., Armstrong Cork Co., Baker Refrigeration Corp., R. H. Bishop Co., Coldin Cabinet Co., Inc., Distillation Products Industries Div. of Eastman Kodak Co., Electric Auto-Lite Co., Frick Co., Kason Hardware Corp., Kingston-Conley Div. of the Hoover Co., La-Crosse Cooler Co., Pinnacle Equipment Corp., Sealed Unit Parts Co., Inc., Super-Cold Corp., Techniflex Corp., Victory Metal Mfg. Corp., Viking Copper Tube Co., Henry Vogt Machine Co., and Wilson Refrigeration, Inc.

HERE ARE WINNERS OF REWA PRIZES

Kenneth R. Kester, Olean, N. Y., was awarded the television set first prize in the competition sponsored by Refrigeration Equipment Wholesalers Association for the best 25-word statement on the most educational exhibit at the REMA-RSES Educational Exhibit and Conference in Buffalo.

Second prize went to Lowell D. Eichhorn, of Bucyrus, Ohio, and third award to John Roberts, Glace Bay, N. S., Canada.

The booth of Alco Valve Co. was selected by entrants in the competition as the one of most educational value.

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DISPOSAL UNIT



Designed for the air conditioning field, here is a completely automatic, foolproof unit that removes condensate fluids from the receiver tank and pumps them to an outside drain. Simple to install . . . Low operating cost . . . Totally enclosed motor . . . Compact, rugged, rustproof construction . . . Quiet and reliable in operation.

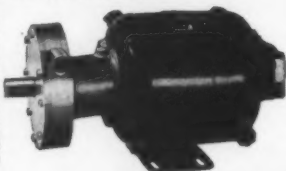
SPECIFICATIONS

Tank — Approximately 1½ gal. capacity with ¾" inlet, ½" outlet. Brass with black enamel outside.
Pump—Bronze centrifugal pump. Delivery app. 4½ GPM at 0 PSI and shut off of 12½ PSI.
Motor — 1/40 HP 3450 RPM, single phase, 60 cycles, 115 volt, totally enclosed, ball bearing, capacitor start motor.

Control — Controlled by a float operated switch, so set to pump out app. 0.8 gal. of condensate at each operation. Built-in check valve prevents the outlet line from draining back into the tank. Overall Dimensions—5¼" wide; 9½" long; 12 15/16" high. Weight 21 lbs.

Investigate Eastern's Proven Pumps for ICE CUBING MACHINES

Designed for continuous duty under severe operating conditions, the Eastern Model D-11 Pump is a heavy duty centrifugal pump. Size: 10" x 5½" x 5". Weight: 18 lbs. Power: ½ HP, heavy duty, split phase, fully enclosed, induction motor. Available in 110 or 220 volts A.C. Maximum output: 8 GPM at zero pressure. Maximum pressure: 14.5 PSI at shut off. Furnished in special alloys for hazardous service. Built for dependable service.



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56

INDUSTRY TASK GROUPS NAMED

Appointment of seven air conditioning and refrigeration equipment manufacturing industry task groups to study conservation, simplification and substitution of critical materials needed in the defense program was announced recently by the National Production Authority. Task groups and their members are:

Self-Contained and Room Air Conditioners (room coolers, window coolers, store units)—Marshall G. Munce, York Corp., chairman; M. C. Terry, Philco Corp.; Frank Stevens, Carrier Corp.; H. L. Laube, Remington Corp.

Refrigeration Heat Exchange Equipment (finned evaporators, shell and tube condensers, forced convection coils)—E. M. Flannery, Bush Mfg. Co., chairman; Israel Kramer, Kramer Trenton Co.; H. T. Jarvis, Refrigeration Engineering, Inc.; H. Blake Thomas, McQuay, Inc.

Refrigeration Condensing Units—T. S. Pendergast, Universal Cooler Div.,

Tecumseh Products Co., chairman; R. L. Sears, Lynch Corp.; W. F. Switzer, Frigidaire Div., General Motors Corp.

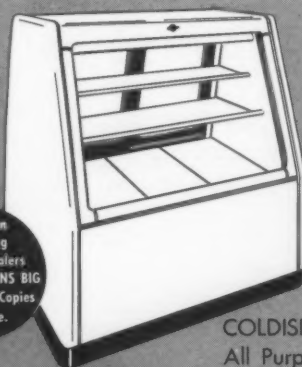
Display cases, Walk-In and Reach-In Refrigerators, Commercial Frozen Food Cabinets—W. B. McMillan, Hussmann Refrigerator Co., chairman; C. V. Hill, Jr., C. V. Hill & Co., Inc.; J. H. Coolidge, Sherer-Gillett Co.; Robert L. Tyler, Tyler Fixture Corp.

Soda Fountains, Ice Cream Cabinets and Counter Type Ice Cream Freezers—L. N. Lucas, Bastian-Blessing Co., chairman; Armando Conto, Freez King Corp.; Robert Norris, Schaefer, Inc.; S. C. Knight, Stanley Knight Corp.

Refrigeration Valves and Fittings—W. A. Siegfried, Superior Valve & Fittings Co., chairman; Hermann Spoehrer, Sporlan Valve Co.; F. C. Shafer, Imperial Brass Mfg. Co.

Water Coolers—H. F. Hildreth, Westinghouse Electric Corp., chairman; C. F. Hansel, Filtrine Mfg. Co.; J. F. King, Halsey W. Taylor Co.; L. L. Berken, Coolstream Corp.

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MAY, 1951 • COMMERCIAL REFRIGERATION

COOLING ESSENTIAL, SAY FOOD GROUPS

Seven major food processing and storage industries have cooperated in the preparation and publishing of a brochure entitled "What Price Food Preservation?" These industries, responsible for the major portion of the nation's food supply, are heavily dependent on refrigeration.

The brochure, a composite of statements by the several industries, tells the story of the vital need for refrigeration in the continued operation of these key industries.

This 16-page publication, illustrated and printed in two colors, is designed primarily for use in discussions with the various government agencies directly concerned with national defense matters. The brochure is also expected to have much value in reviewing materials, manpower, and other operating requirements with the field offices of government agencies.

Food processing and storage industry trade associations which jointly

sponsored the brochure in cooperation with the Air Conditioning and Refrigerating Machinery Association, representing the refrigeration equipment manufacturers, are:

American Meat Institute, International Association of Ice Cream Manufacturers, Milk Industry Foundation, National Association of Frozen Food Packers, National Association of Ice Industries, National Association of Refrigerated Warehouses, National Fisheries Institute.

SIMONS TO HEAD N. E. WHOLESALERS

Joseph Simons, of Joseph Simons Co., Hartford, Conn., was elected president of the New England Refrigeration Wholesalers Association at a recent meeting of the group in the Publick House, Sturbridge, Mass. Carl Payson, of C. P. Payson & Co., Springfield, Mass., was re-elected secretary-treasurer.

Lengthy discussions of governmental regulations, the current "Freon" situation, and other problems of mutual interest were held.

BUILD LONGER LIFE into refrigeration systems

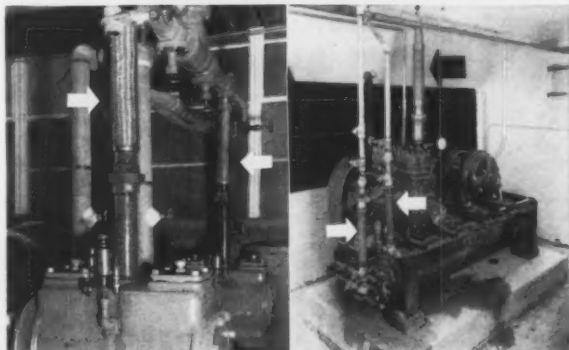


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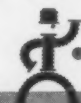
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TYPICAL INSTALLATIONS



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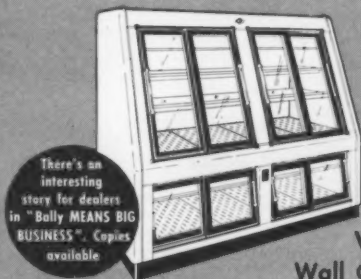
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Wall Case

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BALLY MODELS and SIZES**

Bally
REFRIGERATED DISPLAY CASES
Bally Case and Cooler Co., Bally, Pa.

There's an
interesting
story for dealers
in "Bally MEANS BIG
BUSINESS". Copies
available

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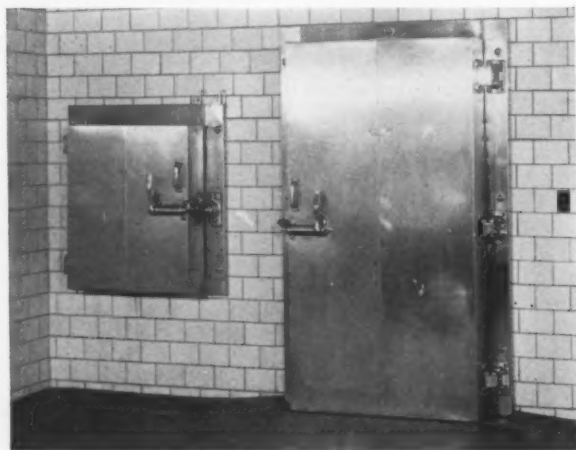
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JAMISON Stainless Clad Doors preferred for "SANITARY SHOWMANSHIP"

- ▶ FAR MORE SANITARY!
- ▶ EASIER TO KEEP CLEAN!
- ▶ MODERN DESIGN... GLISTENING BEAUTY!



IN THE STORE... Wendt Cream Top Dairy, Niagara Falls, uses the "Sanitary Showmanship" of Jamison Stainless Clad Doors both in the retail store and in the plant. Reach-in Door in the store leads to the sales Cooler.



IN THE PLANT... Stainless Clad, Super-Freezer Walk-in Door leads to the large Ice Cream Hardening Room. Super-Freezer Reach-in Doors, for speedy handling of cans and packages, are also of sanitary Stainless in keeping with the glistening, spotless, easy-to-clean tile walls. Sanitation and Cleanliness are by-words with all dairies... that's why they are buy-words with JAMISON.

For full information on the popular JAMISON line, write for Catalog 175. Jamison Cold Storage Door Co., Hagerstown, Md., U. S. A.



the leader for more than 50 years

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DR. WALKER RESIGNS POST AT ANSUL

Dr. Walter O. Walker, nationally known authority on the chemical phases of refrigeration, has resigned his position as research director of Ansul Chemical Co.

Due to a serious illness last year Dr. Walker had been on an extended leave of absence. Recuperating in Florida, he wrote Ansul president Robert C. Hood expressing "his deep regret at leaving the company after 15 very enjoyable years." For health reasons Dr. Walker said that it was necessary to remain in Florida.

President Hood, observing that "although a man like Dr. Walker appears once in a generation," remarked that the company planned to continue its policy of refrigeration research with the same corps of specialists. They include William R. Rinelli, assistant to the vice president, Dr. Philip J. Ehman, manager of chemical research, John D. Bopp, refrigeration research chemist, and their staffs.

Following Dr. Walker's resignation, Ansul reorganized its entire research and development program. C. Victor Mars was appointed director of research and development, a new position.

Mars will coordinate the work of four departments; pilot plant, chemical research, market research and mechanical research. Dr. Ehman, who had been Dr. Walker's assistant for several years, becomes manager of Ansul's chemical research department. No other personnel changes were involved in the reorganization.

In announcing his resignation, Dr. Walker also informed Ansul of his intention to accept a position with the University of Miami at Coral Gables, Fla. He will become professor of chemistry and director of industrial chemical research. By joining the staff at Miami, Dr. Walker returns to a familiar education scene. He had been dean of the university's chemistry department before leaving in 1936 to organize Ansul's research program.

Choice Territories Open

FOR



Shown: Refrigerated Fruit and Produce Case

**REFRIGERATED
DISPLAY CASES**

(for every need,
in every size)

PROVE YOURSELF AND WE'LL GIVE YOU . . .

- A Bigger Discount
- Immediate Delivery
- A Protected Territory
- Full Color Dealer Aids
- Top Products for Food Stores and Florists

Tell us about yourself!

GEM REFRIGERATOR CO.

165 W. WYOMING AVENUE, PHILA. 40, PA.

Manufacturers of Refrigerated Cases for Over 30 Years

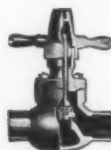
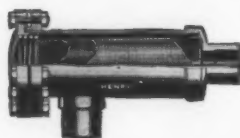
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MAY, 1951 • COMMERCIAL REFRIGERATION

HENRY

*really gives you
something extra*

a few of many outstanding advantages



IN PACKLESS VALVES, still the only Balanced-Action valve on the market—no extra cost

IN STRAINERS, forged brass end caps with integral fittings, reinforced screen, large filtering area, distortion-proof clean-out flange

IN DRIERS, forged brass end caps with integral fittings, natural finish, Abso-Dry pressure sealed, dispersion tube and extra capacity

IN WING CAP VALVES, greater flow, bolted bonnet and self-aligning stem disc

IN RELIEF VALVES, diaphragm construction, positive controlled cushion reseating with relief capacity that meets latest code requirements

IN AMMONIA VALVES, compact and strong, self-aligning stem disc

**IN ALL HENRY PRODUCTS—ADVANCED
FIELD-PROVEN DESIGN AND CONSTRUCTION**

Sold by Leading Wholesalers

HENRY VALVE CO.

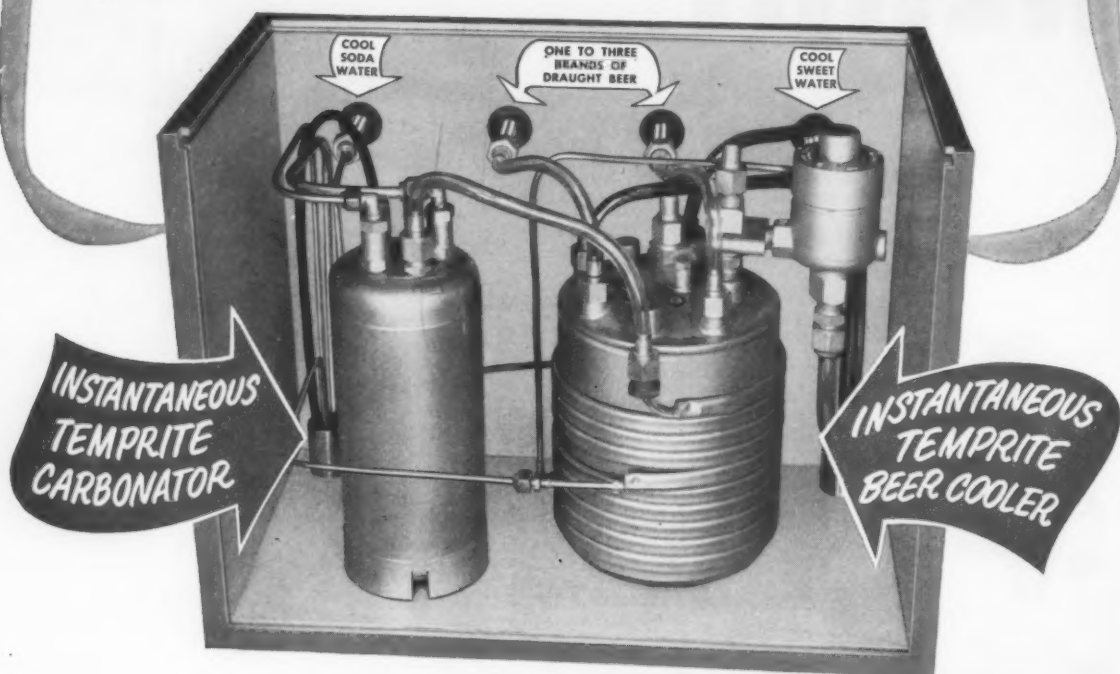


Valves • Driers • Strainers • Control Devices and Accessories
for Refrigeration, Air Conditioning and Industrial Applications

MELROSE PARK, ILL. (CHICAGO SUBURB)
CABLE: HEVALCO, MELROSE PARK, ILLINOIS

New Prospects! New Profits!

when you offer **TEMPRITE'S** Carbonator and Beer Cooler Installation



Here is your answer to a long-standing need for a compact draught beer, soda water and sweet water dispensing system . . . for taverns, bars, clubs, hotels and cafes! The complete, compact installation shown requires a space only 11" wide x 20" long x 15" high. A Temprite Instantaneous Beer Cooler and a Temprite Instantaneous Carbonator can easily be installed in any new or existing coil box. This system can dispense up to 60 gph of carbonated water; one to three brands of constant 40° F. draught beer; and ample cool sweet water.

Beer is cooled to just the right temperature through the interior stainless steel coils of the famous Temprite Instantaneous Beer Cooler. Normal temperature city water is efficiently converted to sparkling soda water in the Temprite Instantaneous Carbonator and then

cooled through the upper exterior coil on the beer cooler, just before being dispensed. The lower exterior coil cools up to 8 gph of plain sweet water.

There is an unlimited profit opportunity for refrigeration men who can offer Temprite's new combination Carbonator and Beer Cooler installation. The demand for new installations of this type is increasing daily; and a ready-made market exists for the sale of Temprite Carbonators to the thousands of satisfied users already equipped with Temprite Beer Coolers.

You can now offer your customers these 2 compact Temprite units, with assured long life; trouble-free service; and at really worth-while operating economies. *New Prospects and New Profits can be yours! Write for complete details today!*

TEMPRITE PRODUCTS CORP.,
P. O. Box 72-B, Birmingham, Mich.

Send me details on the Temprite Carbonator and beer cooler application line.

Company name _____

Address _____

City _____ State _____

Signed _____

"Be right with Temprite"

Temprite

PRODUCTS CORPORATION

P.O. BOX 72-B, EAST MAPLE ROAD
BIRMINGHAM, MICHIGAN

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CONTRACTORS

NEWS • ACTIVITIES • PLANS

Can't Build Locker Storage Plants Unless Authorized, NPA Rules

IN AN explanation of its basic construction order M-4 issued recently, the National Production Authority says that a specific authorization must be obtained before construction can be started on cold storage food locker plants and restaurants which are open to the general public.

However, NPA points out that authorization is not required for construction of food processing plants, nor for a restaurant in a factory for the exclusive use of the factory personnel.

The order requires that a permit be obtained for construction of storage facilities for consumer goods or personal effects, but not for storage buildings used in manufacturing or processing, or for wholesaling of food products. Authorization also is required for construction of farmers' cooperative stores handling food or other agricultural products.

Other Requirements Told

Order M-4, which is designed to conserve strategic materials and manpower for the mobilization program, prohibits new construction costing more than \$5000 for amusement, entertainment or recreation purposes and requires specific authorization for construction of a list of buildings which includes nearly all commercial construction costing more than \$5000.

The installation of acoustical tile in a building is considered alteration work, not maintenance and repair, NPA points out. If its cost, added to the cost of other construction work on a building during a consecutive 12-month period, exceeds the small job exemption of \$5000, the installation cannot be made without an NPA authorization.

In computing costs under this small job exemption it is not necessary to

include the cost of items which are to be reused rather than newly acquired, such as prefabricated partitions.

A builder must apply to NPA for an exception from the order if it should become apparent that costs will exceed the small job exemption of \$5000 on a construction project that was started with the expectation that costs would run below that figure. Construction must be halted until NPA has acted.

Processing Offices Named

Thirteen regional and 16 district offices of the Department of Commerce have been authorized by NPA to act on construction applications. Applications for construction can be obtained from any of the Department's more than 80 field offices, but should be filed only with the nearest field office empowered to act on it.

The construction controls Division in Washington passes on applications from metropolitan Washington, D. C., and all others involving more than \$1 million in cost or 50 tons of steel.

Regional and district offices authorized to act on construction cases are:

- Region 1—1800 Customhouse, Boston
- Region 2—42 Broadway, New York 4
- Region 3—Jefferson Bldg., 1015 Chestnut, Philadelphia 9
- Region 4—Room 2, Mezzanine, 801 E. Broad St., Richmond 19, Va.
- Region 5—418 Atlanta National Bldg., 50 Whitehall St., Atlanta 3
- Region 6—410 Union Commerce Bldg., 925 Euclid Ave., Cleveland 14
- Region 7—1150 McCormick Bldg., 332 S. Michigan Ave., Chicago 4
- Region 8—338 Midland Bank Bldg., 401 Second Ave., S., Minneapolis 1
- Region 9—2400 Fidelity Bldg., 911 Walnut St., Kansas City 6, Mo.
- Region 10—Room 1114, 1114 Commerce St., Dallas 2
- Region 11—142 New Customhouse, 19th & Stout Sts., Denver 2

Region 12—306 Customhouse, 555 Battery St., San Francisco 11

Region 13—809 Federal Office Bldg., 909 First Ave., Seattle 4

District office locations:

314 United States Appraisers' Stores Bldg., 103 S. Gay St., Baltimore 2

1038 Federal Bldg., 230 W. Fort St., Detroit 26

Chamber of Commerce Bldg., 310 San Francisco St., El Paso, Tex.

224 Post Office Bldg., 135 High St., Hartford 1, Conn.

602 Federal Office Bldg., Houston 14, Tex.

425 Federal Bldg., 311 W. Monroe St., Jacksonville 1, Fla.

1546 U. S. Post Office and Court House, 312 N. Spring St., Los Angeles 12

229 Federal Bldg., Memphis 3

947 Seybold Bldg., 36 N.E. First St., Miami 32, Fla.

1508 Masonic Temple Bldg., 333 St. Charles Ave., New Orleans

1013 New Federal Bldg., 700 Grant St., Pittsburgh 19

217 Old United States Court House, 520 S. W. Morrison St., Portland 4, Ore.

327 Post Office Annex, Providence 3, R. I.

910 New Federal Bldg., 1114 Market St., St. Louis 1

508 Post Office Bldg., 350 S. Main St., Salt Lake City 1

518 Bedell Bldg., 118 Broadway, San Antonio, Tex.

GUILD DINNER-DANCE IS SCHEDULED FOR MAY 19

Twelfth annual dinner-dance of the Refrigeration and Air Conditioning Guild, Inc., New York City, will be held Saturday night, May 19, at the Park Sheraton Hotel.

Program includes a cocktail party from 7:30 to 9 p.m. in the hotel's Colonial Room, and dinner, entertainment and dancing in the Grand Ballroom.

Members of all branches of the refrigeration industry are invited to attend. Reservations may be made with the Guild, 154 Nassau St., New York, for \$15 per person.

DO-97 RATINGS CAN'T BE EXTENDED 'TIL RECEIVED

A caution on the use of the DO-97 rating assigned for maintenance, repair and operating supplies by NPA Regulation 4 has been issued by National Production Authority.

NPA emphasizes that businesses are not permitted to extend DO-97 ratings to obtain inventory of maintenance, repair and operating supplies they sell in anticipation of DO-97 ratings they expect to receive later.

Section 2(h) of NPA Regulation 4 says in part:

"Products used for MRO (or materials required for incorporation in such products) shall not be deemed

"RUBATEX CUTS DRY ICE LOSS 35%"

THE FAR RICH ICE CREAM COMPANY, Los Angeles, California, has this to say about RUBATEX Hardboard used to insulate their ice cream delivery carts: "By using RUBATEX instead of other kinds of insulation, we can make the walls thinner, thereby having much more storage space . . . we accomplish the greatest thing of all by saving between 35% and 40% of our dry ice each day . . . Our ice cream carts are more economical to operate than we expected."



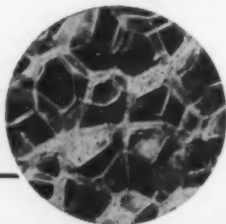
"K" FACTOR 0.21
ZERO MOISTURE PICK-UP
SAVES SPACE
REDUCES WEIGHT

The closed cell structure of RUBATEX Hardboard makes it ideal for low temperature insulation applications. It cannot absorb moisture. Its K factor (0.21) remains constant, providing maximum efficiency indefinitely. RUBATEX has good structural strength and does not settle. It resists oxidation—is rot, vermin and

termite proof. RUBATEX weighs only 4½ lbs. per cubic foot and it can be easily worked with ordinary wood-working equipment.

RUBATEX Hardboard may very well be the perfect answer to your insulation problems. Our engineers will gladly give you the benefit of their experience. For more information, write for Design Data Book RBH-1-50, Great American Industries, Inc., RUBATEX DIVISION, BEDFORD, VIRGINIA.

CLOSED CELLS shut out heat, cold and moisture. Photo-micrograph of a section of RUBATEX Insulation Hardboard shows the dense structure of individually closed cells which give this product its exceptional insulating properties.



RUBATEX[®] INSULATION HARDBOARD

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CONTRACTORS

NEWS • ACTIVITIES • PLANS

MRO as to the producer of such products even though he sells them for use by others as MRO. However, when he receives rated orders for such products, he may extend the rating to get materials to be incorporated in the products. Materials or products sold by a distributor thereof for use by others as MRO shall not be deemed MRO as to such distributor, but when he receives rated orders for them, he may extend the rating to get them."

In other words, you can, and should, extend the DO-97 ratings on to your suppliers to replenish inventory, but you can only extend those ratings which have first been extended to you. You can pass-on the ratings after you get them from your customers, but not before.

USE DO-97 RATINGS, SERVICE FIRMS URGED

In a letter to all wholesalers handling the company's line of refrigeration controls and accessories, F. G. Coggin, manager of Detroit Lubricator Co.'s refrigeration division, has requested that they urge refrigeration service men to get DO-97 ratings for repair parts from their customers in all cases where this priority can be applied.

DO-97 ratings are authorized for maintenance, repair and operating supplies under NPA Regulation 4, the blanket order applying to all types of businesses.

The service man, after he gets the rating from his customer, can then extend it through his wholesaler to the manufacturer. This in turn helps the manufacturer get materials that will enable the continued manufacture of vital repair parts.

Declaring that the DO-97 rating "may well represent our chance of survival," Coggin's letter to wholesalers urging them to have their service customers use this rating said that "insofar as expansion valve, solenoid valve and control requirements through you, our wholesaler, are concerned we estimate that at least 85% of these are for the maintenance or repair of commercial equipment."

"NPA Regulation 4 authorizes any

KEEP REFRIGERANTS



**WITH
MUELLER BRASS CO.
DELUXE DRIERS**

**Extra-capacity cone-screen filter
unequalled for efficiency in the
refrigeration industry.**

FORGED BRASS ENDS
Heavy duty type with
husky wrench flats.

**OUTLET RETAINER
SCREEN**
By itself, equal to
the filter elements
in most ordinary
driers.

WHITE WOOL DISC
Doubles filtering
capacity.

DRYING AGENT
Installed under strict
laboratory control
with sealed charging
equipment.

**LOCKED-IN CONE
OUTLET SCREEN**
Extra capacity free
flow strainer surface.

FILTER BED
Chemically cleaned
wool mass traps fine
metallic grit or other
foreign particles.

**INLET CONTAINER
SCREEN**
Positive desiccant
retainer without
pressure drop.

The millions of Mueller Brass Co. Deluxe Driers that are now in service provide the kind of proof you want—proof that no other drier can approach for all-around efficiency on-the-job, and for good reason. The Mueller Brass Co. Deluxe Drier is a typical example of the dependability and quality that Mueller laboratory and development engineers have made available in so much refrigeration equipment. The famous cone screen filter greatly increases the Deluxe Driers' working life. The filter strainer unit of the Deluxe Drier removes every minute particle of foreign matter from the line—keeping the refrigerant completely clean as well as dry.

Order now from your refrigeration wholesaler.

**Have these STREAMLINE products on hand
for every job where you want dependable
performance.**



WROUGHT COPPER FITTINGS



FLARE FITTINGS



LIQUID INDICATORS



VALVES



Write for catalog R-151
describing complete line
of STREAMLINE refrigeration
products.

STREAMLINE refrigeration
products are individual
and multiple packaged for
complete protection.

MUELLER BRASS CO. PORT HURON 12, MICHIGAN

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COMMERCIAL REFRIGERATION • MAY, 1951

CONTRACTORS

NEWS • ACTIVITIES • PLANS

business (grocer, druggist, butcher, etc.) to certify an order to cover its maintenance, repair and operating supply requirements," the letter continues. "The customer merely marks his order 'DO-97' and signs his name.

"If we are to continue the manufacture of the equipment which you distribute, these ratings must be extended to us. Insist that orders from your servicemen are so certified by their customers, and that this certification be extended to us in every instance possible."

The letter points out that the DO-97 rating cannot be applied to the procurement of repair parts for the service of household units.

CHANGE OF ADDRESS

T. A. Weager and R. E. Sherman, Cleveland representatives for Buffalo Forge Co. and Buffalo Pumps, Inc., have announced a change of address to Room 570, Hanna Bldg., Euclid Ave. at 14th St. Telephone number is unchanged.

New York City Restrictions on Water for Cooling Are Eased

LOCAL restrictions on the use of water for refrigeration and air conditioning equipment have been relaxed to some extent under new rules adopted by the New York City Department of Water Supply, Gas and Electricity.

The new regulations, which were announced by Water Commissioner Dominick Paduano, require that water be recirculated only when the capacity of refrigeration and air conditioning units exceeds 6 tons. Previously the use of a water conserving device was required on equipment of more than 3 tons.

A major improvement in the city's water situation permitted the change, which was suggested by an industry advisory committee, according to Paduano. Reservoirs are now filled to 99.5% of capacity, compared to 60.45% a year ago, he said.

The industry committee was formed by ACRMA at the request of city

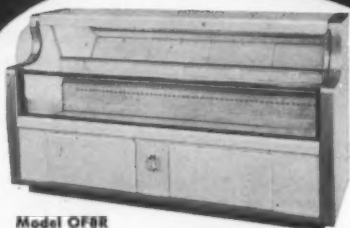
water officials following discussions between the association and the officials. According to William B. Henderson, executive vice president of ACRMA, the purpose of the committee was to work with municipal authorities in redrafting the water usage regulations on a more equitable and constructive basis.

F. R. Rice, Frigidaire Sales Corp., was chairman of the committee, assisted by L. D. Spence, Typhoon Air Conditioning; B. A. Natkin, General Electric; W. L. Souther, Worthington Pump; J. Watts, Airtemp Div. of Chrysler Corp.; W. J. Hoeing, Servel; R. M. Ekins, Carrier Corp.; and L. Wasson, York Distributors, Inc.

Henderson described the new regulations as a decided improvement on the "drastic regulations" in force since the end of 1949, and noted that the original regulations had been adopted without consultation with industry representatives.

SELL and PROFIT

with this
Proven
line!



Model OFBR
Frozen Food Case . . . one of the biggest selling refrigerators on the market today. Features controlled refrigeration and the Nofrost valve which automatically defrosts.

- 67 years of leadership in the commercial refrigeration field.
- Direct factory financing.
- Exclusive selling features: Floating Air, Coolite and the Nofrost valve.
- Strong national advertising.
- A complete line of refrigerators, including: open cases, closed display cases, walk-in coolers, bakery, beer, florist and many others.

A few
territories
open for
top-notch
dealers.



Ed Friedrich Sales Corporation
Dept. CR, 1117 East Commerce • San Antonio, Texas

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Water Shortage?

SOLVE IT WITH



**Evaporative
Condensers
AND COOLING TOWERS**

Available in 55 different sizes—ranging from
3 to 210 TR in a single unit.



MODEL "P"
Evaporative Condenser
3 to 100 TR
Freon or Ammonia
Outdoor Installation Only
(Also "PT" Cooling Towers)



MODEL "U"
Evaporative Condenser
10 to 100 TR
Freon or Ammonia
Indoor or Outdoor Installation
(Also "UT" Cooling Towers)

For further information, write for literature.

BALTIMORE AIRCOIL COMPANY, INC.
2519-23 Pennsylvania Ave., Baltimore 17, Md.

—Specializing in Water-Saving Devices Since 1938—

Circle No. 44 on Reader Service Card for more information

In announcing the new rules, Paduano said that it was often physically difficult for smaller establishments to install recirculating equipment, and that saving of water used by smaller units was no longer important.

Studies of water use by Water Department engineers, the industry committee, and water users showed that users of 5 and 6-ton units consumed little more water than users of 3-ton units, Paduano said. Many doctors and dentists, who use these 5-ton units, submitted their water bills to prove their point, he said.

New "General Rules"

The new "General Rules" read as follows:

"145—No installation of refrigeration and/or air conditioning equipment requiring the use of water shall be installed on any premises supplied from the municipal system until a permit authorizing such installation has been issued by the department to the installer.

"Applications for permits for refrigeration and/or air conditioning to be installed shall specify the information requested on the application. Approved copy of the application will be returned to serve as the permit.

"Where the minimum rate of water required for the operation of the apparatus exceeds one-half gallon per minute, the supply shall be metered. Where the minimum rate of water does not exceed one-half gallon per minute, the supply shall be metered or charged for on an annual rate basis subject to the discretion of the department.

"146—All installations of any individual or collective system of refrigeration and/or air conditioning equipment in any premises for a single consumer shall be installed under the following specifications:

"A. The term 'Air Conditioning', as used herein, applies to that equipment used primarily for human comfort cooling and shall be considered on the basis that one compressor motor horsepower is equal to one ton of refrigeration.

"Equipment used for a purpose other than air conditioning shall be considered on the basis that one compressor motor horsepower is equal to 0.6 ton of refrigeration.

"Refrigeration or air conditioning equipment using illuminating gas for energy shall be rated on the basis that one ton is equal to the removal of 12,000 Btu per hour with a 5° F. evaporating temperature and 86° F. condensing temperature.

"B. All installations of refrigeration and/or air conditioning equipment of six tons and under shall be provided with an automatic water supply regulating device. In no case shall the equipment use in excess of 2 g.p.m. per ton capacity.

"C. All installations of any individual or collective system of refrigeration and/or air conditioning equipment of over six tons shall be equipped with a water conserving

device such as economizer, evaporative condenser, water cooling tower, or similar apparatus, which device shall not consume for makeup purposes in excess of 5% of the consumption that would normally be used without such device.

"147—Each direct water connection to a refrigeration and/or air conditioning unit using water for cooling purposes shall be equipped with a check valve, except in installations where the water supply piping has no contact with the refrigerant. This will be the case where two substantial and independent wall thicknesses of metal separate the refrigerant from the city water supply.

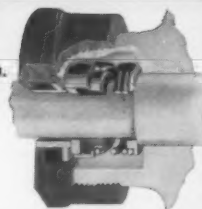
"Refrigerating and/or air conditioning

units with a capacity of more than 20 lbs. of refrigerant shall be provided with a relief valve installed on the outlet side of the check valve of the water supply connection, such relief valve being set at 5 lbs. above the maximum water pressure at the point of installation."

NEWMAN HEADS NPA CONSTRUCTION DIV.

Rufe B. Newman, Jr. has been appointed as Director of the Construction Controls Division of National Production Authority.

ROTARY SEAL Replacement Units

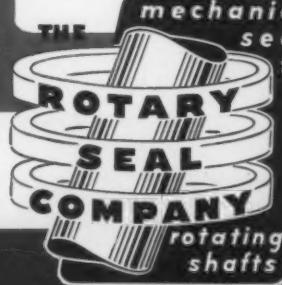


Unit No. 3280

Available in a complete range of sizes—including larger models for use in Commercial and Semi-Commercial Compressors like those listed. Easy to Install—Simple in Construction—Efficient in Operation—Economical.

AVAILABLE FOR MORE THAN 900 COMPRESSOR MODELS

THE mechanical seals for



AT ALL

"Seal with Certainty!"

**2020 NORTH LARRABEE STREET
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CANADIAN AGENT: 2025 ADDINGTON AVENUE
MONTREAL 28, QUEBEC, CANADA

• COPELAND

• FRIGIDAIRE

• KELVINATOR

• GENERAL ELECTRIC

• UNIVERSAL COOLER

• WESTINGHOUSE

• BAKER

• BRUNNER

• CARRIER

• CURTIS

• COLDSPOT

• PAR

• and many others

USEFUL

BULLETINS • BOOKLETS • CATALOGS

The publications listed below are available to readers without charge. Simply circle on the postcard in this issue the key numbers of the items you wish to receive. Your requests will be forwarded directly to the companies concerned.

Military Air Conditioning . . . A brochure describing the services, products, and facilities now available from Remington Corp. for the handling of problems involving military applications of indoor climate control. An extensive list of such military and defense production applications of air conditioning is presented.

Circle No. 100 on Reader Service Card

Refrigeration Accessories . . . The complete line of refrigeration parts and accessories produced by Wabash Mfg. Co. is covered in this new catalog (No. 511). New in this catalog is an expanded series of brass dryers with 1/2-inch SAE fitting and 1, 3, and 5-oz. packages of silver solder.

Circle No. 101 on Reader Service Card

Multi-Room Conditioning . . . An application and selection bulletin (DS-369) covering Trane Co.'s "Custom-Air" conditioning equipment for multi-room buildings. In addition to a complete description of the system and the units which comprise it, complete selection data and charts are provided, mechanical specifications are outlined, and layouts are presented of a typical system and its control circuit.

Circle No. 102 on Reader Service Card

Electrostatic Filters . . . An 8-page leaflet (SA-6691) that describes the "Preciptron" electronic air cleaner in non-technical language. Units for factories, stores, offices, and homes are covered, with discussions of how units are constructed, how they operate, and where they can be used to advantage. Available from Westinghouse Electric Corp.

Circle No. 103 on Reader Service Card

Refrigeration Oil . . . Characteristics and recommended applications for various grades of refrigeration oils are detailed in a new 12-page booklet prepared by Sun Oil Co. Designed to aid anyone responsible for selecting or supplying correct lubricants for refrigeration and air conditioning systems. A description of the "floc" test, an important method of determining an oil's suitability to low-temperature conditions, also is included.

Circle No. 104 on Reader Service Card

Decal Renovator . . . A bulletin describing the "Rem 69" process for reclaiming stocks of decals which have warped, cracked and faded in storage. Available from Rembrandt Decalcomania Co.

Circle No. 105 on Reader Service Card

Condenser Tube Maintenance . . . Report of long research on causes of corrosion in condenser tubes and means of combating them is contained in the 28-page brochure entitled "Life Extension for Condenser Tubes" just published by Revere Copper & Brass, Inc. Importance of this information is highlighted by present restrictions on the use of copper. Considerable attention also is given to the selection of proper materials for condenser tubes. A useful table gives estimating data for condenser and heat exchanger tubes in various alloys.

Circle No. 106 on Reader Service Card

Moisture Meter . . . A new 6-page bulletin issued by Tagliabue Instruments Div. on the "Tag" midjet moisture meter, specially designed for instantly determining the moisture content of wood, lumber, plaster and wood products. Bulletin describes the meter's design and construction and explains its varied uses.

Circle No. 107 on Reader Service Card

Freezers . . . A booklet issued by Schaefer, Inc., on its Pak-A-Way home freezer, showing models, construction features, and a tabulation of estimated savings that use of the freezer makes possible.

Circle No. 108 on Reader Service Card

Industrial Control

Industrial control for temperature, flow, pressure, liquid level and humidity is the subject of Catalog 8304 just published by Minneapolis-Honeywell Regulator Co., Industrial Div. This 60-page catalog presents over 100 different models of non-indicating electric, electronic, and pneumatic controllers that have innumerable uses in industrial applications.

Among important additions to the previous line are electronic, electric, and pneumatic insertion type temperature controllers; magnetic starters and contactors; heavy-duty pneumatic positioning motors; pneumatic automatic reset relays, and both pneumatic and electric step controllers.

Copies of this catalog may be obtained by writing on your business letterhead directly to Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne and Windrim Aves., Philadelphia 44, Pa.

Cube Ice Cabinet . . . A bulletin (YCI) issued by the C. Schmidt Co. describing the Thesco cube ice cabinet which has been designed for York ice making machines where two or three units are used. Illustration shows YC3 unit, the one designed for three cube makers. Bulletin gives specifications of both models, tells details of cabinet construction, etc.

Circle No. 109 on Reader Service Card

Accumulators . . . An 8-page bulletin (No. 108) describing and illustrating "Icy-Flow" accumulators produced by McQuay, Inc., for storing cooling capacity for air conditioning applications. Tells what accumulator does, how it operates, and where it can be used. Gives detailed example of selection procedure on typical installation. Schematic diagrams illustrate various applications.

Circle No. 110 on Reader Service Card

Portable Electric Hammer . . . Descriptive information available from Skil-saw, Inc., on the new "Skil" portable electric hammer Model 437, which is said to be applicable for drilling in masonry, cutting and chipping, vibrating concrete, digging out mortar, scaling metal, shaping wood, demolishing brick walls, and caulking joints and seams. Catalog sheet describes the tool, lists specifications, and shows accessories which are available to increase versatility of the tool.

Circle No. 111 on Reader Service Card

Packaged Conditioners . . . A new consolidated bulletin combining complete specifications, pictures, and special features of the lines of packaged air conditioners and evaporative condensers manufactured by Typhoon Air Conditioning Co., Inc. Details of machinery are fully illustrated. Specifications and ratings for each unit are shown.

Circle No. 112 on Reader Service Card

Synchronous Generators . . . New 4-page, 2-color bulletin on "Tri-Clad" high-speed synchronous generators, available from General Electric Co. Designated as GEA-5470, the bulletin covers generators for standby, portable, and prime-source power in ratings from 1.875 to 50 kva with frequencies of 60 and 400 cycles. Illustrated with product pictures as well as cut-away and exploded-view photographs, the bulletin enumerates construction features of the new generators and includes a comparison table of ratings.

Circle No. 113 on Reader Service Card

Liquid Level Gauges . . . A new 24-page bulletin on water level gauges (L700) issued by the Bristol Co. Bulletin describes instruments for measuring and recording liquid level in various uses. Describes float, pressure bulb, pressure, counterpoise, differential pressure and air-bubbler types of gauges. Bulletin also contains information of remote recording and remote automatic pump control of water level with Metameter telemetering instruments.

Circle No. 114 on Reader Service Card



The Popular "Six"!

It's a "Juice Center"... a "Packaged Foods Center"... a "Spot Special"! Holds 456 cans or 192 packages. Kelvinator's commercial-duty design means safe, sure, positive food protection. Full open top... 2 large sturdy baskets... versatile backboard for promotional signs. Priced surprisingly low!



The Versatile "Twelve"!

BIG IN CAPACITY—big in sales-power! Here's room for more than 400 average-size packages of frozen foods. And there's a brilliantly illuminated superstructure that features your sign material or dummy package display... lights the cabinet interior... stops store traffic in its track! Kelvinator quality, extra-values throughout. Big profit possibilities!

"6" and "12"

add up to profits

when you sell these

Kelvinator Frozen Food Merchandisers!

Both add up to profits for you! They're top favorites with frozen food retailers everywhere. Sell them as "full-line" cases for small stores—as "spot-specials" for super markets! Kelvinator low temperature dependability in every inch. Priced surprisingly low. Act right now! Write, phone or stop in at your nearest Kelvinator supply depot for information on price and availability. Kelvinator, Division of Nash-Kelvinator Corporation, Detroit 32, Michigan.

PROFIT TODAY...BUILD FOR TOMORROW WITH

Kelvinator

THE NAME THAT SELLS...THE NAME THAT SATISFIES!



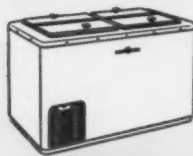
KELVINATOR
BEVERAGE COOLERS



KELVINATOR
CONDENSING UNITS



KELVINATOR
WATER COOLERS



KELVINATOR
ICE CREAM CABINETS



KELVINATOR
AIR DRIER

Circle No. 46 on Reader Service Card for more information

and AIR CONDITIONING • MAY, 1951

NEW

PRODUCTS

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your requests will be forwarded directly to the companies concerned.

Reach-In Refrigerator

Product: Model IRA 42-S self-contained reach-in refrigerator.

Manufacturer: Refrigeration Div. International Products Corp., Los Angeles, Calif.

Features: 42-cu. ft. capacity. All metal and stainless steel construction.



"Shell within a shell" design, with absolutely no wood used in construction and no metal reinforcement holding outer and inner shells together. Each shell is complete unit in itself, and the two are separated by 4 inches of fiber glass insulation. Outside dimensions are 54½ inches wide, 32¼ inches deep, and 74⅝ inches high. Powered by 1/3-hp Servel hermetic unit. Weight is 600 pounds.

Circle No. 130 on Reader Service Card

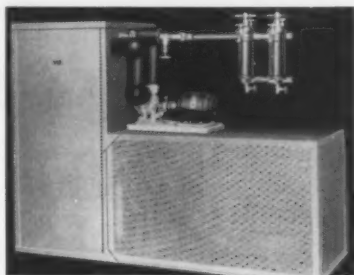
Water Cooling System

Product: Completely packaged circulating system for supplying cooled water to as many as 300 drinking stations.

Manufacturer: Filtrine Mfg. Co., Brooklyn, N. Y.

Features: Compact unit can supply offices, hospitals, and other multi-story buildings, or large area buildings such as mills and factories, with up to 400 gallons per hour of 50-degree water. In addition it generates

up to 150 gallons reserve chilled water to meet extra-heavy demand for drinking water during peak load periods. Built with two balanced evapo-



rators to prevent pressure drop. Insulated with 2 inches of hydrolene-sealed cork board at sides and bottom and 6 inches of rock wool on top. Heavy duty bronze-fitted pump with enclosed impeller circulates water with equalized pressure to all outlets. Precludes chlorine taste or discoloration of water through use of filter-rectifier assembly. Heavy-gauge angle-framed container in which unit is packaged houses any desired refrigerating machine, which can be factory installed with all approved automatic controls.

Circle No. 131 on Reader Service Card

Air Purifier

Product: "Vita-Aire" air purifying unit.

Manufacturer: Vita-Aire Div.,



Hydro Aire Corp., Waukesha, Wis.

Features: Purifies air by passing it through ultra-violet field, oxidizing

all organic matters such as smoke, gases, and odors. Also reduces bacteria. Designed to be installed in any air duct or air conditioning unit for any building or home. Low initial cost and economical to operate. Portable units available for use where there are no ducts. These portable units may be located anywhere it is convenient and plugged into any 110-volt a.c. outlet.

Circle No. 132 on Reader Service Card

Cooling Towers

Product: Four improved models of cooling towers for use with self-contained air conditioning units and other water-cooled refrigeration applications in the 5 to 15-hp capacity range.

Manufacturer: Carrier Corp., Syracuse, N. Y.

Features: Built-in, two-bend, eliminator blade section which virtually eliminates overspray, thus reducing water consumption to minimum. Water turbine drive for fan and spray system eliminates need for electrical connections to unit. Turbine bearings are supported on a film of



water with no metal-to-metal contact, insuring long operating life and requiring no lubrication. Exclusive fill material of asphalt-impregnated board, which is extremely light in weight, non-warping, and impervious to water. Casing is hot-dipped galvanized after fabrication for corrosion resistance.

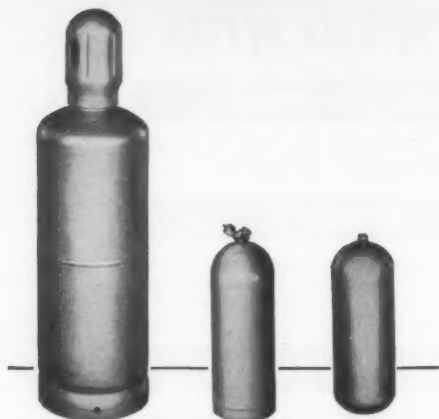
Circle No. 133 on Reader Service Card

Oil Cooler

Product: "Will-Cool" oil cooler for machine tool temperature control.

Manufacturer: B. S. Williams Co., Inc., Mt. Vernon, N. Y.

SPECIFY
Prest-O-Lite
 Trade-Mark
CYLINDERS



PREST-O-LITE cold-drawn cylinders for refrigerant gases are available in 5-lb. (rounded bottom or with foot ring), 10-lb., 25-lb., and 35-lb. sizes. You can have 50-lb., 100-lb., 150-lb., or special sizes and designs quickly made to your specifications.


You save money in the long run when you insist on the best cylinders. Fill in the coupon below and mail it today for more information about PREST-O-LITE cylinders that will meet your needs.

For Refrigerant Gases Because You Get...

- ① **Uniform Wall Thickness**—Unusually close tolerances in wall thickness assure you a superior cylinder.
- ② **Long Life**—Years of extra service and added protection against denting, piercing, corrosion, and pitting result from the thicker walls and rugged construction.
- ③ **Light Weight**—You cut transportation costs because there are no extra-thick sections which only add weight without adding strength.
- ④ **Maximum Safety**—All cylinders are tested for leakage with dry air, in addition to standard safety tests.
- ⑤ **Benefit of Years of Experience**—Unsurpassed design and production come from more than 35 years of experience and skill in the development, manufacture and use of compressed gas cylinders.
- ⑥ **More Than Code Requirements**—You know PREST-O-LITE cylinders will never let you down because they're made, tested, and inspected not only in accordance with I.C.C. Specifications but also undergo many rigid tests far beyond these requirements.

LINDE AIR PRODUCTS COMPANY

A DIVISION OF UNION CARBIDE AND CARBON CORPORATION

30 East 42nd Street  New York 17, N. Y.

Offices in Other Principal Cities

In Canada: DOMINION OXYGEN COMPANY, LIMITED, Toronto

The term "Prest-O-Lite" is a registered trademark of Union Carbide and Carbon Corporation.

LINDE AIR PRODUCTS COMPANY
 30 East 42nd Street
 New York 17, N. Y.

R12

Please send full information about PREST-O-LITE cylinders for refrigerant gases.

NAME

COMPANY

ADDRESS

**MAIL THIS
 COUPON
 NOW!**

Rx

PRESCRIPTION

FOR MAKING GOOD REFRIGERATION SYSTEMS BETTER

IMPERIAL TRIPLE-SEAL FITTINGS

A groove in the seat brings you triple-seal tightness in every joint.

IMPERIAL TUBING TOOLS

A complete line of the *finest* in tubing tools—for cutting, flaring, bending, reaming, swedging, pinch-off and soldering.

IMPERIAL *DIA SEAL* VALVES

No springs—either-way flow, only two moving parts, easy finger-tip action, long-life diaphragm.

IMPERIAL *TORPEDO* DRIERS

One-piece shell. Filtering area graduated with drier capacity. Refillable and non-refillable types.

IMPERIAL CHARGING AND TESTING UNITS

Double gauge, Hi-Lo single gauge and standard single gauge units; kits for hermetic units—compact, convenient, forged brass construction.

IMPERIAL "Diamond Eye" LIQUID INDICATORS

Straight through liquid indicator with *clear vision* double sight ports. "Eye" shows at a glance if system lacks refrigerant.

Ask for Catalog 80-A

See Your Jobber

THE IMPERIAL BRASS MFG. CO., 536 S. RACINE AVE., CHICAGO 7, ILL.

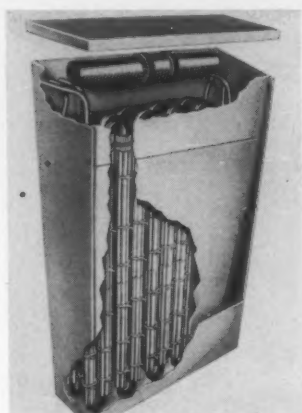
In Canada: The Imperial Brass Mfg. Co., 33 Church St., Toronto, Ontario

IMPERIAL

FITTINGS • VALVES • DRIERS • FILTERS
FLOATS • CHARGING LINES • TOOLS
for Cutting, Flaring, Bending, Pinch-off, Swedging

Circle No. 48 on Reader Service Card for more information

Features: Will cool all machine tool oils within their range of viscosities so that different oils may be selected if desired without affecting operation of cooler. Size range is from 1½ to 7½ tons. Simple method of



calculating refrigerant capacity required for machine tools ensures proper temperature control under peak load conditions. Only the normal low head, low horsepower, open impeller pump is required to lift the oil to the top of the cooler. Oil is confined to the cooling surface in a film and flows by gravity over the surface and back to the machine tool's tank. Thermostats are of proper range and are not affected by shop temperatures. A developed expansion valve prevents over-loading and allows use of high speed and low speed refrigerant compressors. Compressor oil separators or refrigerant interchangers are not required in the circuit. Refrigerant liquid does not feed to the cooler during the off cycle, causing refrigerant liquid pumping at start. Cooling surface can be inspected and cleaned by maintenance men without the necessity of disconnecting refrigerant lines or oil lines. Accumulation of fine metal particles is restricted to a non-cooling surface where they can be seen and removed.

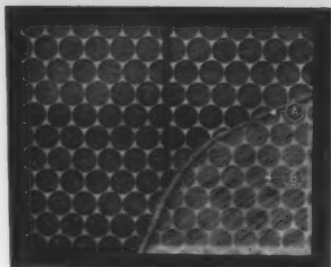
Circle No. 134 on Reader Service Card

Filter

Product: Model I-S (impingement-strainer) air filter for all central heating, ventilating, and air conditioning systems.

Manufacturer: Glasfloss Corp., New York, N. Y.

Features: To the standard impingement filter pad of the regular Glasfloss line a bonded industrial mat has been added to form the I-S model.



(A) Standard impingement filter pad.
(B) Bonded industrial mat.

This pad is placed on the down-stream side of the filter, producing an im-

pingement-strainer filtering action, resulting in the trapping of 95 to 98% of all dust and dirt. Resistance and life of filter is normal.

Circle No. 135 on Reader Service Card

Dehumidifier

Product: "Moisture Magnet" portable electric dehumidifier for commercial and home use.

Manufacturer: Remington Air Conditioning Div., Auburn, N. Y.

Features: Removes 14 pints of water every 24 hours from room air at 80 F and 79% relative humidity,



just plug in!

**NO PLUMBING
NO GADGETS**

The new BTC Rapid Freeze Ice-Cube Maker that brings you the most advanced improvements in refrigeration history.



OUTSIDE ENTRANCE



24 QUICK RELEASE TRAYS

FEATURING

- Exclusive "Outside Entrance" Cube Storage Compartment.
- 24 quick release trays. 288 lbs. of ice . . . or 2300 cubes per day.
- Aligns with all under-bar fixtures.
- Overall dimensions are, 24" deep, 39" high, and 38" wide.

MGRS. REPRESENTATIVE: **REFRIGERATED EQUIPMENT SALES CORP.**
19 West 44th Street, New York 18, N. Y.

MANUFACTURED BY **The BREWER-TITCHENER CORP.**, BINGHAMTON, N. Y.

SEND FOR ILLUSTRATED LITERATURE

Circle No. 49 on Reader Service Card for more information

and up to 1 pint per hour under more severe conditions. Simple plug-in installation. Special fan draws damp air over refrigerated coils at proper rate for maximum moisture to condense on coils, then expels dry, reheated air into the room. Coils are devised to form moisture quickly into drops, preventing re-evaporation. Drops fall into a rustproof 8-quart receptacle which is emptied daily. Impossible for unit to over-dry air at ordinary room temperature. Cabinet of molded, tempered, plastic-impregnated fiber ensures si-

lent, vibration-free operation. Hermetically sealed refrigeration system. Larger models manufactured for strictly commercial use.

Circle No. 136 on Reader Service Card

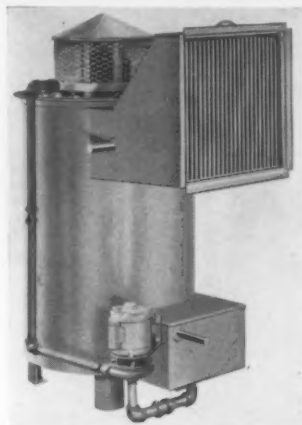
Evaporative Condenser

Product: "Wat-R-Miser Series O" low tonnage evaporative condenser for small air conditioning and commercial refrigeration installations.

Manufacturer: Drayer - Hanson, Inc., Los Angeles, Calif.

Features: Available in four sizes

and combines desirable characteristics of evaporative condenser construction into compact factory-assembled unit, reducing field handling and eliminating field erection. Design

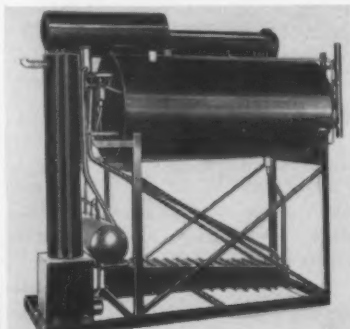


does away with lengthy shaft, bearings, belts, drives, and supporting superstructure. Vertical stainless steel eliminators easily removed for cleaning. Coil is all copper prime surface "pitched tube." Can be mounted against outside wall with no need for ducts. Spray section easily serviced from outside. Direct drive axial flow fan assembly, removable for service, located in dry air stream. Pump is unit type with separate motor. Float assembly situated in external sump for convenient servicing. All connections readily accessible. Housing is hot dip galvanized inside and out after fabrication.

Circle No. 137 on Reader Service Card

Water Chiller

Product: Absorption-type water chiller with capacity of 20 tons or more for use with air conditioning units or in manufacturing processes.



Presently available for defense orders only.

Manufacturer: Servel, Inc.,



"They must like the Marsh line the way they go for it"

The kind of words a manufacturer likes to hear were being spoken by Bill Davidson, General Manager of Hinshaw Supply Co. (center) to Ross Price of Marsh Instrument Co. (left) when the picture above was taken in this San Francisco supply house.

Operating branches in Oakland and Sacramento, this up and going concern has achieved its success by the formula that never fails . . . equipment of highest quality backed by prompt, understanding service. "Marsh is our kind of equipment," says Mr. Davidson, "because it is our customers' kind—the kind that keeps them coming back for more." Gil Mead, experienced Hinshaw counter man, was right there to second the motion in no uncertain terms.

In every section of the U. S. you will find progressive firms like Hinshaw Supply who handle the full line of Marsh Gauges, Thermometers and Marsh Electromatic Valves. They handle Marsh because they know it will give the kind of service that enables their customers to do a better job. Popular Marsh products are described here. For complete facts —

See Your Jobber

MARSH INSTRUMENT CO.

Sales affiliate of Jos. P. Marsh Corporation
Dept. P, Skokie, Ill.



A great pair of instruments for the service man who wants the ultimate in testing gauges. Just two of the many Marsh Gauges — refrigeration gauges for all purposes.



This is the "Serviceman" thermometer that Bill Davidson is holding. It's the greatest tool in the testing kit.

One of the many Marsh Electromatic valves—the type WP Water Regulator. The full line includes suction throttling valves and solenoid valves in a wide range of types and sizes.



MARSH

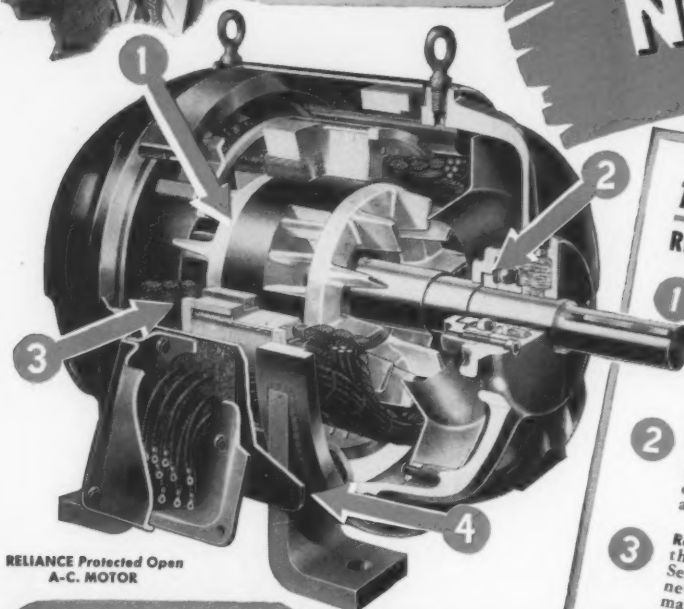
Refrigeration Instruments

Circle No. 50 on Reader Service Card for more information



WHY HASN'T
SOMEBODY TOLD ME
THIS BEFORE?

"...all motors are
NOT ALIKE"



RELIANCE Protected Open
A-C. MOTOR

**These 4 Advantages Alone make
RELIANCE the motor that is different!**

- 1 Dynamic Balancing—Precision Fits—**Every motor is dynamically balanced by skilled technicians using latest electronic-principle equipment. Machining of parts to exacting tolerances guarantees precision fitting throughout. Result: a smoother-running, longer-lasting motor!
- 2 No Lubrication Worries—Precision Bearing Mounting,** with double-shielded ball bearings, assures longer bearing life under all normal conditions, whether overgreased, undergreased or not greased at all. "You can't grease 'em wrong!"
- 3 Reli-X Insulation** furnishes a new high in the protection of stator windings. Selected materials, exclusive methods and new continuous-sequence applications make this the *unfailing* insulation!
- 4 Steel for Strength—**Steel construction, with electrically welded joints, combines maximum strength with minimum weight.

RELIANCE
Precision-Built
MOTORS

...are made **better** to deliver
DEPENDABLE POWER—LONGER!

Reliance has a way of building motors that must be seen to be fully appreciated. Any time we can take a motor user through the modern plants where Reliance *Precision-Built* Motors are made, we can be reasonably sure of another good Reliance customer. We would be delighted to have you make this visit. But if it isn't practical, call in your nearest Reliance representative and *see* the convincing facts he can show you on the precision methods that produce these truly superior motors. Now available from ¾ to 300 horsepower.

**HOW TO
SELECT THE
RIGHT MOTOR**

Here's a book which digests all the information you should have in selecting the motor that's just right for any job. New torque and current standards recently adopted by the National Electrical Manufacturers Association for A-C. motors are tabulated and explained. And these are further supplemented by more detailed performance data on Reliance *Precision-Built* Motors. Write today for this important new Motor Data Bulletin, B-2101.



Sales Representatives in Principal Cities

**RELIANCE ELECTRIC AND
ENGINEERING CO.**

"Motor-Drive is More Than Power" • 1066 Ivanhoe Road, Cleveland 10, Ohio

Circle No. 51 on Reader Service Card for more information

and AIR CONDITIONING • MAY, 1951

Evansville, Ind.

Features: Nominal refrigeration capacity rating is 20 tons when it supplies chilled water at 45 F and uses 360 pounds of steam per hour and condensing water at a temperature of 85 F. With colder condensing water or more steam, capacity is increased. Where waste heat or waste steam is available, operation of the unit for industrial processing or comfort cooling applications can be had for practically no cost. Designed to deliver refrigeration in the form of chilled water which is piped to air conditioner units, each containing filter, coil, and fan. For winter operation, hot water may be supplied through the same piping system. Servel will furnish the refrigeration "core," leaving the choice of water circulating pumps, heat exchange surfaces, blowers, filters, steam controls and cooling towers to the engineer or contractor. Occupies only 19 sq. ft. of floor area. Units are hermetically sealed and capacity tested.

Circle No. 138 on Reader Service Card

**BUY FROM YOUR
REFRIGERATION WHOLESALER**

Hydraulic Hand Truck

Product: "Grand Shop Caddy," a standard size hand truck with novel built-in hydraulic lift.

Manufacturer: Allied Mfg. & Sales Co., Chicago, Ill.

Features: Enables one man to easily lift, move and stack a 500-



pound load. Loads can be lifted as high as 54 inches in a jiffy. When lifting operations are not required it is useful as an ordinary heavy duty

hand truck. Hydraulic mechanism consists of a lever operated ram which is connected to the lift pallet by means of a chain and sprocket. Each stroke of lever lifts pallet about 1 1/4 inch. Full height can be obtained in less than a minute. Convenient foot pedal controls lowering of load. Rubber tired aluminum wheels.

Circle No. 139 on Reader Service Card

Solenoid Shut-Off

Product: Corrosion resistant solenoid operated shut-off valve for instant control of all types of fluid pressure operated equipment and machine process applications.

Manufacturer: Airmatic Valve, Inc., Cleveland, Ohio.

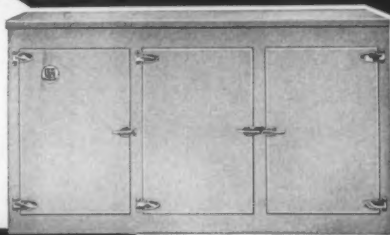
Features: Direct solenoid two-way capacity shut-off valve features positive seal, ports in line, and only one moving part. Constructed of cast naval bronze. Pressures range from 0 to 225 psi and operates on ac or dc. Eliminates use of levers, pilot, and other forms of indirect application. Designed to reduce possibility of foreign matter accumulating on the valve seat. Construction permits

ICE CREAM, CUSTARD MIX . . . WHEN YOU WANT IT

MIX COOLERS



Convenient, sanitary storage at properly controlled 36°-38° temperature. Be flexible and prepared for varying demand by storing in La Crosse mix coolers.



HI-BOY

LO-BOY

Quality assured by reducing freezing time of mix stored in beautiful white enamel well insulated cabinets. . .

Hi-Boy holds 4-10 gal. mix cans plus room on shelf for small containers.

**ALSO WALK-IN COOLERS
FOR LARGER STORAGE
FACILITIES.**

Reduce freezing power costs and time by holding mix at proper temperature in Lo-Boy. Unexpected demand no longer a problem and more sales will result. . . 2, 3 and 4 door models

for 4, 6, and 8-10 gal. can capacities. Available in same finish and insulation as Hi-Boy.

WRITE



LA CROSSE COOLER CO.

LA CROSSE, WIS.

Circle No. 52 on Reader Service Card for more information

MAY, 1951 • COMMERCIAL REFRIGERATION

for all water cooling use *Filtrine* —sell more condensing units

"DO Rating" Orders are Vital...

All Federal Agencies ... Air Force ... Army ... Navy ... Marine Corps ... know that Filtrine products meet government specifications.

COOLERS FOR MESS HALLS — CAFETERIAS

Sell your own condensing unit ... with coolers backed by Filtrine's 40-year dependability. 1. Government and general acceptance for high efficiency—dependability—20-year life-span construction. 2. High capacity—super storage. 3. Handsome exterior (all Stainless Steel or Duco with Stainless trim). 4. Equipped to suit with top and/or side shelves. 5. Bubblers, glass-fillers, front, back, or all sides. 6. Can be "Taste-Master" equipped to banish chlorine and insure sparkling water.



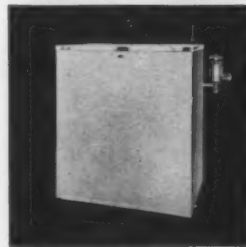
MC-14-S MC-25-S
MC-43-S MC-40-S



No. 4
"Taste-
Master"
Filter

COOLERS FOR X-RAY & PHOTOGRAPHY

Sell your own condensing unit ... with these Filtrine coolers pre-approved by military and V.A. medical procurement offices, Signal Corps, Air Force, etc., for X-Ray darkroom and photo-lab installation. 1. Dependable water of correct temperature for film processing. 2. Large storage for heavy draw and emergency requirements. 3. High efficiency, economy operation—20-year life-span construction. 4. Floor mounted with *Stainless Steel* work-table top; also under-counter models. 5. Filters (extra) prevent scratched and pinholed negatives.



PH-7 PH-14 PH-25



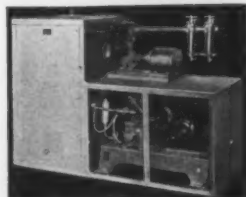
MH-300-R M-90-R MA-40-R M-25-R M-14-R X-2-R M-10-R
MH-150-R M-75-R M-43-R M-7-R M-20-R
M-300-R M-40-R
M-150-R

REMOTE COOLERS FOR ALL USES

Sell your own condensing unit ... with Filtrine coolers suitable for new and replacement installation everywhere: barracks, military depots, mills, schools, postoffices. 1. Capacities—5-800 g.p.h.—storage 7-300 gallons. 2. High efficiency—20-year life-span. 3. Insulation—2" hydrolene-sealed corkboard. 4. Filters and Rectifiers/Dechlorinators available for all sizes.

PACKAGED CIRCULATING CHILLED WATER SYSTEMS

Sell your own condensing unit ... with complete Filtrine systems for circulating drinking water in offices, hospitals, industrial plants ... for processing water as low as 34 deg. 1. Completely packaged for streamlined engineering, quick installation. 2. Capacities 5 to 400 g.p.h.—Storage 5 to 150 gallons. 3. Equipped with heavy-duty pump. 4. Your condensing unit factory installed. 5. Insulation—2 inch hydrolene-sealed corkboard. 6. 20-year life-span construction. 7. Filter-Rectifier assembly (extra) to kill chlorine and keep water sparkling.



Typical "Packaged"
Circulating Chilled Water System



Get our new "How to Sell D O Jobs" Write Dept. RF2

FILTRINE MANUFACTURING COMPANY · BROOKLYN 5 · N. Y.

"Water Coolers and Filters for 40 Years"

Circle No. 53 on Reader Service Card for more information

and AIR CONDITIONING • MAY, 1951



the
**'PENN'dulum of
tubing quality
moves the hands
of achievement**

COPPER TUBING SWINGS TO DEFENSE



Modern Papco tube tools conserve tubing by making a perfect flare and cut every time. Send for informative literature today.

THE national shortage of copper is controlling tubing production, but critical shortages never affect Penn quality. Years of experience have enabled Penn to develop quality control which maintains high standards. All hands at Penn are trained to produce the finest seamless tubing—dehydrated for moisture-free installations—annealed for easy bending—clean and bright for trouble-free service. Accomplish more with less—production gains momentum when quality takes over—Penn tubing speeds installations, minimizes waste and reduces trouble. Tubing with the Penn trademark on the outside is your guarantee of 100% quality on the inside.



QUALITY TUBING HAS A "PENN NAME"

PENN BRASS & COPPER COMPANY

ERIE • PENNSYLVANIA • TELEPHONE 3-5111

mounting in any position without harm to valve or solenoid. Inspection and service can be accomplished without disturbing piping. Furnished in standard pipe sizes $\frac{1}{4}$ through 2 inches.

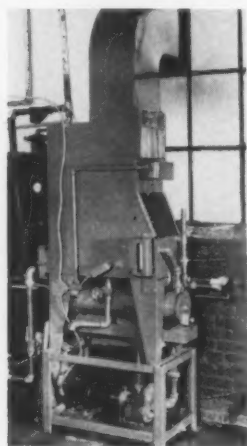
Circle No. 140 on Reader Service Card

Concentrator-Cooler

Product: Improved "No-Frost" equipment for refrigerating such applications as cold test rooms, food freezing plants, or food storage facilities.

Manufacturer: Niagara Blower Corp., New York, N. Y.

Features: Equipment consists of



spray cooler which provides a controlled stream of air at sub-zero temperatures by means of passing air over refrigerated coils that are prevented from accumulating ice or frost by a constant spray of a non-freezing compound. To keep this process automatic and continuous, the non-freezing liquid is maintained in a concentrated condition by constantly removing the moisture that is condensed out of the atmosphere by contact with the refrigerated spray. This is done in the concentrator. A portion of the solution, as it is continuously being diluted by condensation of water vapor in the spray cooler, is pumped to the concentrator. Here the water is removed by evaporation. The diluted solution is sprayed in a chamber through which air is drawn by fans. A heating element raises the temperature of the air, promoting the evaporation of the water from the solution. In a second stage of re-concentration, located above the spray nozzles, the air stream, which now contains the evaporated water vapor

and some of the solution's liquid vapor, is cooled by a reflux coil. This forces condensation of the liquid vapor and the re-concentrated solution is returned to the spray cooler. This system permits refrigeration to as low as -30°F without interruption for defrosting. From this point, additional refrigerant coils may be used to obtain extreme low temperatures.

Circle No. 141 on Reader Service Card

Reach-In Case

Product: Bar Model 80G reach-in refrigerator.

Manufacturer: Barr Mfg. Co., Oakland, Calif.

Features: Designed to stimulate impulse purchases of bottled beverages and other goods requiring refrigeration. Four "Servue" full display, clear opening doors with Thermopane glass combine with mul-lion concealed "Slimline" lighting to provide maximum display effect. Blower type unit coolers. Insulation is 3-inch Fiberglas block type, hydro-lene sealed. Heavy tinned adjustable shelves are rail flanged. Capacity is 85 cu. ft.; shelf area is 72 sq. ft. Exterior dimensions are 98 $\frac{1}{4}$ inches



Good-by return calls. Seal terminal leaks in hermetic units permanently, in a few minutes with Delavan Replacement Terminals. No need to remove unit. No special tools required.

Write for Free Bulletin showing all sizes.

DELAVAN
MANUFACTURING CO.
8009 SIXTH AVENUE
DES MOINES 13, IOWA

Circle No. 55 on Reader Service Card
and AIR CONDITIONING • MAY, 1951



DRY KOOL BOTTLE COOLER

World famous

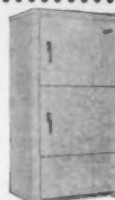
for performance and design. 14 models to meet all requirements in stainless steel or brown Dulux finish.



UPRIGHT FREEZER

15 Cubic Feet

Scientific placement of cooling coils, two separate food compartments, dual doors to minimize cold loss, insure balanced freezing at minimum cost.



KUBEMASTER ICE CUBE MAKER

Whenever food or refreshment is served, ice cubes as you need them. Choice of 3 beautiful models.



KOOLMASTER DIRECT DRAW

Engineered to serve beer to the "Brewmaster's" taste. Its smart appearance enhances any establishment. Choice of 8 models in Stainless steel or brown Dulux finish.



REACH-INS

Modern flush fronts with recessed handles in popular sizes. Ten models to choose from. Available in white Dulux, stainless steel fronts and glass doors.



DESIGNED—ENGINEERED—MANUFACTURED
By

UNITED REFRIGERATOR COMPANY

Locust and Walnut Sts.
HUDSON, WISCONSIN

Circle No. 56 on Reader Service Card

JEFFY INSTALLED



AEROVOX SCREW-TERMINAL REPLACEMENT CAPACITORS

● No soldering of connections! Aerovox Universal Electrolytic Motorstarting Replacement Capacitors (Type MSRT) have screw terminals for your convenience. But if you still want soldered connections, just remove screws and you have soldering lugs.

Typical of Aerovox jiffy servicing. Up-to-date listings or the Aerovox Capacitor Selector help you pick the correct replacement. Emergency Capacitor gets that motor going immediately. Later, pick up the required replacement capacitor for permanent installation. It all adds up to maximum profit for minimum time.

● Your local Aerovox distributor stocks Aerovox capacitors for your convenience. Ask for latest data—or write us.

CAPACITORS - VIBRATORS - TEST INSTRUMENTS

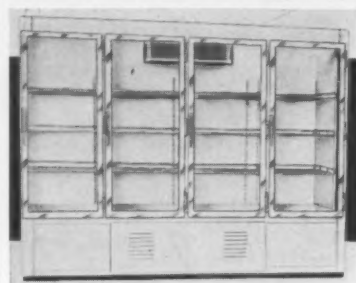


**FOR RADIO-ELECTRONIC AND
INDUSTRIAL APPLICATIONS**

AEROVOX CORPORATION, NEW BEDFORD, MASS., U.S.A.
Sales Offices in All Principal Cities • Export: 41 E. 42nd St., New York 17, N.Y.
Cable: AEROCAP, N.Y. • In Canada: AEROVOX CANADA LTD., Hamilton, Ont.

Circle No. 57 on Reader Service Card
78

long, 79 inches high, and 33 inches deep. Chrome plated, flush mounted hardware with automatic trigger type



latches. Torpedo type demountable hinges. Finished in high baked Dulux enamel on rust proof enameling. Steel interior and exterior, and stainless steel bottom. Other models available in smaller sizes and with solid or "blind" doors.

Circle No. 142 on Reader Service Card

Continuous Freezer

Product: Model 77 automatic continuous freezer for frozen custard, soft ice cream, and similar products.

Manufacturer: Tekni-Craft, Rockton, Ill.

Features: Utilizes scientific prin-

ciple of barometric pressure to provide entirely automatic and continuous feed. Regardless of rate of drawoff, mix always flows into the freezer at exactly the right rate. Nothing to adjust or regulate. No pumps or valves. Overfilling or underfilling freezer is impossible. Baro-



metric feed and automatic freezing keeps 10-quart chamber always full. Mix container keeps mix supply in full view, even from a distance. Freezer has its own beater, drawoff, automatic temperature controls, and beater drive shaft.

Circle No. 143 on Reader Service Card

Food Industry Motor

Product: New "Life-Line" splashproof motors, designed for food industry applications where splashing or hosing down exceeds NEMA standards for splashproofing.

Manufacturer: Westinghouse Electric Corp., Pittsburgh, Pa.

Features: Gasketed cast iron conduit boxes with provision for attaching waterproof conduit. Motor windings are given multiple dips and brakes in moisture-resistant thermoset varnish. Baffles inside rear splashproof hood prevent water creeping up inside hood. Neoprene seals on shaft outside splashproof housing give protection against entrance of water into bearing housing. Grease seals located between outer periphery of brackets and splashproof hoods for added protection. Available in frames 326 and smaller, these motors use pre-lubricated ball bearings.

Circle No. 144 on Reader Service Card

**BUY FROM YOUR
REFRIGERATION WHOLESALER**

**DON'T TAKE
CHANCES...**

USE
MADDEN
**DUO-TEST
DRIERS**

Dependable Madden Duo-Test Driers offer you a one-piece copper shell, silver solder construction, with monel fine-mesh screen at inlet and outlet... top refrigeration grade, dust-free silica gel. Non-refillable types in 3, 6, and 9 cu. in., and refillable types in 12 to 50 cu. in. capacities.

So why take chances—always use the complete Madden line of fittings, driers, strainers, charging lines and accessories.

Write Dept. E for Catalog



MADDEN BRASS PRODUCTS CO.
1111 N. FRANKLIN ST. CHICAGO 10, ILL.

Circle No. 58 on Reader Service Card
MAY, 1951 • COMMERCIAL REFRIGERATION

*Over the counter
delivery*

AQUATOWERS

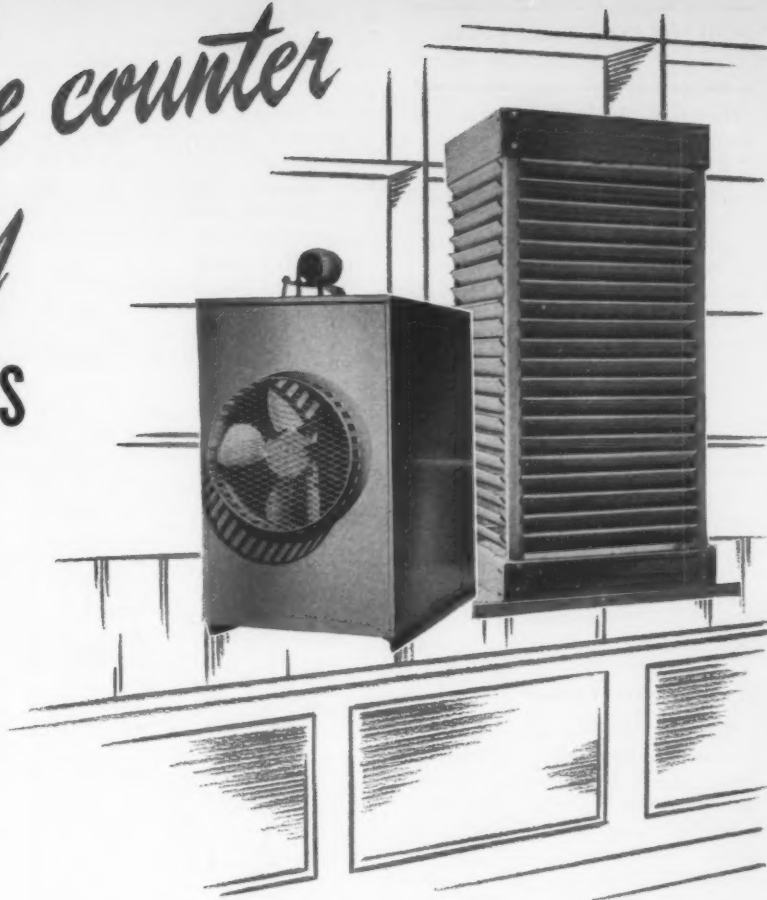
and

SERIES 100

NATURAL

DRAFT

TOWERS



Also Producers of
DRICOOERS
VAIRFLO TOWERS
DOUBLE-FLOW TOWERS
INDUSTRIAL SPRAY NOZZLES



AVAILABILITY is a prime factor for consideration in most equipment today — so it is in water cooling towers for the multitude of three- to fifty-ton jobs this season.

Marley's anticipation of 1951 demand, however, precludes any compromise in quality . . . the finest towers are yours when and where you need them.

AQUATOWERS and **SERIES 100 Natural Draft Towers** are ready . . . in stock awaiting your orders. Service-proved in thousands of installations, these towers are accepted as the standard of the refrigeration and air-conditioning industries. Both types of towers are economical to install and to operate.

There's a size for every job . . . for new construction or for operating improvement of existing installations . . . for location indoors or outdoors.

For complete information contact your nearest Marley representative (one in every large city) or write for Bulletins AQ-50 and 100-51a.

The Marley Company, Inc.

KANSAS CITY 15, KANSAS

Circle No. 59 on Reader Service Card for more information
and AIR CONDITIONING • MAY, 1951

SERVICE CONTRACTS . . .

Continued from page 49

been repaired to the dealer's satisfaction, at the customer's expense.

Currently, Maintenance Agreements account for about one-third of Conditioned Air's service volume. "Although we are constantly striving to increase our contract business, I do not believe that over 50% of the service department volume should be in contract work," Swain says. "More than 50% would restrict the flexibility of our operation."

Conditioned Air is exceptionally active in the promotion of service sales. Direct mail is the mainstay of this part of the program, with letters composed and mailed by Swain on a schedule of about one a month. The letters are mimeographed, and the copy is down-to-earth and friendly, rather than professionally polished. Here are some samples:

Friendly, Not Formal

"This is the time of year when everyone thinks about Christmas gifts," says a letter sent out during that season of the year. "Why not remember your Air Conditioning System this Christmas, and have it completely serviced? Call Conditioned Air Corporation, 89-2461—decide to have your Air Conditioning System serviced regularly as a Christmas present to yourself and your equipment."

Another letter, sent out after the first of the year, reads as follows:

"Usually by this time of the New Year most people have broken just about all of their New Year Resolutions. Why not make a resolution to have your Air Conditioning Equipment serviced regularly? By means of a Maintenance Agreement, we can keep your resolution for you. We have a plan to fit your needs."

Preparedness Is Urged

Here's another:

"With the weather on the cool side, very few people think about Air Conditioning. Now is the time to have your Air Conditioning System checked over so it will be ready for duty when the weather warms up again.

"The Boy Scouts of America have a good slogan—'Be Prepared'. This

is a good slogan for anyone to follow. By having your Air Conditioning System serviced regularly you, too, can 'Be Prepared'."

And still another:

"Business people are smart investors. They must be, to maintain their standing. Get the most for YOUR service dollar by having a company whose many years of service can save you money.

"We have an efficient service organization waiting to show you that GOOD SERVICE is the most economical. GOOD SERVICE is as close as your phone."

The letters, Swain says, get results.

"We use a selected mailing list which we compiled by actual survey, plus our lists of customers using



Carrier equipment. We mainly concentrate on Carrier users, but don't overlook others."

Before he came to Conditioned Air Corp. in April, 1949, Chris Swain had been service manager at Keil Motor Co., Wilmington, Del.

An important part of the company's operation is its forms covering service department and stock room procedure. These include Service Call Record form, Service Order form, Job History card and Stock Control card. A separate story next month will show your these forms, and explain how they're used.

CENTURY OFFICE MOVES

Century Electric Co. has moved its branch office from Rochester, N. Y. to 814 Syracuse-Kemper Building, 224 Harrison St., Syracuse, New York.

Lloyd H. Downing, district sales manager, is in charge.

RESEARCH . . .

Continued from page 54

temperatures and humidity of the South Pacific brought fungus and electronic breakdown; sand and dry desert heat of North Africa represented constant threats to operational reliability of all equipment; salt and fog over island bases and shore areas meant corroded parts and equipment malfunction. Added problems were temperature and vibration conditions of high and low altitude flight.

Production Standards Set

The facilities themselves present an interesting problem. They are designed to withstand a much greater strain than that imposed upon the pieces of equipment themselves and must do their job on a round-the-clock basis, each day of the year, without breakdown.

Provided by the facilities are the data required for the establishment of standards which manufacturers of both military and commercial products use in the design of their equipment.

Of a somewhat different nature is the gigantic cooling installation at the NACA Lab. Here the largest of the Lab's four separate refrigeration installations provides cooling capacity at a rate equivalent to the melting of 30 million pounds of ice every 24 hours to satisfy the requirements of the Lab's supersonic wind tunnel.

Flight Conditions Studied

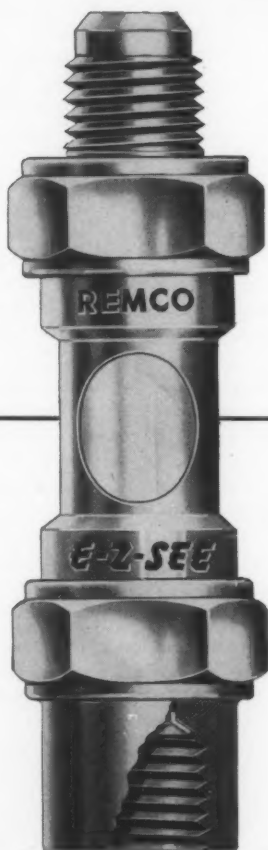
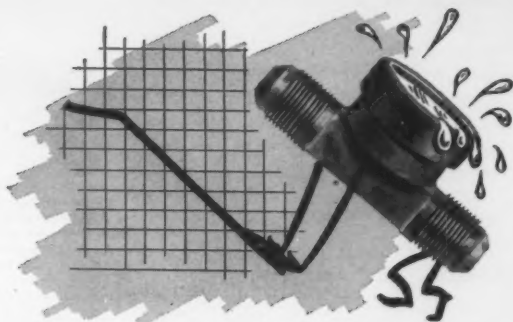
In this supersonic era, propulsion research and refrigeration are almost inseparable. To learn answers to the many, many jet engine problems still unsolved, it is necessary to isolate the individual problems and study them under precisely controlled conditions.

For example, the jet engines of today and tomorrow will have to be completely dependable at altitudes of 50,000 feet and higher. This means that they will have to function properly when the temperature is 65 degrees below zero, and when the "air" they burn is so thin that in it a man would suffocate almost instantly. Ordinary electrical circuits just won't work at such altitudes.

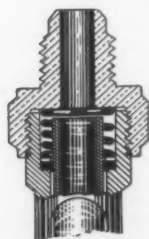
To study such problems, the research engineer recreates the conditions to be found at 50,000 feet or

REMCO EXPLAINS THE TRUTH about losses from

LEAKING LIQUID INDICATORS



E-Z-SEE is available in connection sizes $\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ " in male flare both ends; one end female and one end male (as illustrated); or extended sweat connections to permit soldering without disassembling.



Even though they may be constructed of the highest quality materials, conventionally designed liquid indicators depend upon the resiliency (springiness) of the gasket material to *form the initial seal* and also to *maintain the seal*.

Unfortunately, rubber-like gasket materials tend to lose their resiliency with age, and as they lose their resiliency, they "cold-flow" or "take a set" — then a leak results.

But not so with E-Z-SEE. In the exclusive E-Z-SEE design, (see illustration) each gasket is backed up by a spring. As the E-Z-SEE gaskets lose some of their resiliency, a *leak cannot result* because the coil springs compensate by continuing to apply just the right amount of force upon the gaskets, to *permanently maintain the seal*.

Get REMCO's **E-Z-SEE** TO INSURE GREATER PROFITS

Note how in E-Z-SEE, unlike in conventional liquid indicators, spring-compensated leak-proof gaskets and 'floating' high-pressure Pyrex glass assure you the following advantages: 1) Perfectly safe . . . glass is protected from damage by unique slotting arrangement — safe at pressures up to 500 PSI. 2) Positively leak-proof . . . can't leak because springs automatically maintain just the right force to form a positive seal around the glass. 3) E-Z-to-see through . . . both sides of the body are open to let in light through the tubular high-pressure gauge glass. No more losses from leaking — here truly is the 100% answer to the industry's demand for a fool-proof liquid indicator.

Send for Literature and Prices.



CARRIED IN STOCK BY LEADING WHOLESALEERS EVERYWHERE

West Coast warehouse stock at: 2103 So. San Pedro, Los Angeles, Calif.

EXPORT DEPARTMENT: Melchior, Armstrong, Dessau — Ridgefield, N. J.

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and AIR CONDITIONING • MAY, 1951

whatever altitude he wishes, on the ground, and in order to simulate these conditions, he has to depend on great quantities of refrigerated air.

Despite the fact that at the Lewis Laboratory, the supplies of such mechanically cooled air have been greatly increased to enable conducting the sharply accelerated research load which world conditions have imposed, it is still necessary to ration out the cold stuff.

Cold Is Rationed

This rationing is accomplished through a centralized control room which operates in much the same fashion as a dispatcher's office in a power station, or in a railroad switch yard. From this control room, the operator in charge carefully meters out the refrigerated air, controlling both the temperature and quantity of the air he sends to any of more than one hundred test installations at the Lab.

Temperatures involved range from 90 F. to -108 F. To insure that the right amounts of cold air—it is measured in pounds per second—get to the test setups which have the highest priorities, the total supply available is budgeted from week to week, and day to day, around the clock.

Centrifugal Units Used

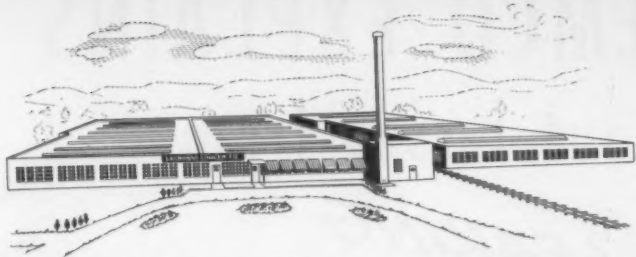
The largest of the Laboratory's refrigerating systems is a battery of 14 centrifugal compressors, each rated at 1500 hp. A total of 30 tons of Freon-12 is required.

Each compressor is equipped with its own drive motor, and two 150 hp reciprocating compressors are hooked into the system to provide for pumping, purging, and also to insure that a safe level can be maintained during the rare periods of shutdown.

This system is used principally in servicing the altitude wind tunnel, where full-sized jet engines can be operated at full power under conditions paralleling those to be found at any altitude from sea level to 50,000 feet.

Cold air going to the engine research laboratory is carried by a main line which feeds 80 pounds per second of air at -20 F. Six secondary, two-stage units are spotted throughout the laboratory to enable adjusting temperatures upwards or downwards to as low as -70 F.

LA CROSSE COOLER EXPANDS RESEARCH, PRODUCTION



Some idea of the extent of the newly enlarged plant of La Crosse Cooler Co. at La Crosse, Wis., is offered by the architect's drawing above. The company recently completed addition of 50,000 square feet of floor space to expand its production facilities for the complete line of commercial refrigeration equipment which it manufactures. The enlarged plant contains an expanded department for research and product development and a show room for a complete display of La Crosse products.

COOLING ORDERED FOR 100 MORE BIG BUSES

One hundred new Carrier bus air conditioning units have been ordered by ACF Brill Co. for installation in intercity busses.

The units are of a special type worked out by Carrier in cooperation with the Brill company. More than 2,000 Brill-manufactured busses already in use with various buslines are equipped with Carrier cooling.

An outstanding feature of the installation designed for the Brill company is a system for operating the refrigeration compressor by direct belt and pulley drive from the main bus engine. This eliminates the weight and maintenance of the auxiliary gasoline engine commonly used to drive the compressor.

Since weight is an important factor in the amount of fuel consumed and the size of bus engine required, the compressor and other parts of the air conditioning system are made of aluminum wherever possible. Use of this light metal has cut the total weight of the system to something less than 600 pounds.

PLANT VENTILATION UPS AIR POLLUTION PROBLEMS

Great strides have been made inside industrial plants with respect to air cleanliness. However, in many cases this has been accomplished at the expense of outside cleanliness. It is apparent that industrial air pollution is due for more and more serious attention, but it must be recognized that reductions in dust concentrations should be consistent with "reasonable cost and reasonable maintenance."

Speaking to Illinois chapter mem-

bers of the American Society of Heating and Ventilating Engineers, John M. Kane, manager, dust control division, American Air Filter Co., also said that the problem of industrial air pollution is not only difficult but perplexing, inasmuch as specifications of discharge effluents are meaningless because of dilution factors.

For an industrial process discharging certain contaminants and causing a certain dustfall, the discharge concentration is dependent upon the amount of air used, and hence the dilution. For the same dustfall an unlimited number of concentrations may be obtained.

With respect to city codes and regulations, he pointed out the importance of giving plant management assurance that a satisfactory method of reducing air pollution will still be satisfactory five or 10 years from now.

CORRECTION

The article on page 41 of our March issue, announcing the appointment of Emanuel Feinberg as sales representative for Dean Products, Inc., in Michigan and western Ohio, incorrectly reported that he also was a representative for Acme Industries and U. S. Air Conditioning Co.

Feinberg does represent McQuay, Inc., Baltimore Aircoil Co., E. D. Goodfellow Co., Precision Heat Exchanger Corp., and United Conditioning Corp. in addition to Dean Products, but not Acme or UsAirCo.

C. K. Carter and Mark O. Wehmeyer now represent Acme Industries in the state of Michigan, while U. S. Air Conditioning Corp.'s representative in that territory is the J. H. Keller Co., Detroit.

What the serviceman should know about "VIRGINIA" REFRIGERATION products

To Charge a System,
Use Refrigerants
That Are
Consistently Pure,
Consistently Sure...



"EXTRA DRY ESOTOO" (B. P. + 14°F.)

"Extra Dry" is the refrigeration grade SO_2 that service and maintenance engineers have endorsed for more than 20 years. Comes in all popular cylinder sizes.

"V-METH-L" (B. P. - 10.7°F.)

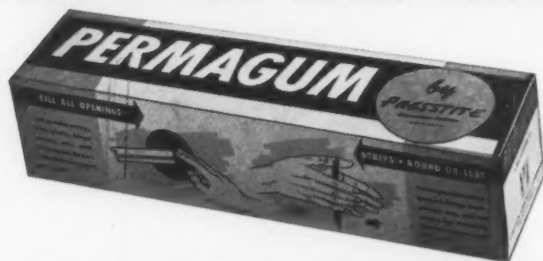
Virginia Methyl Chloride is made specifically for refrigeration use. Low moisture content, low acidity and narrow boiling range recommend "V-Meth-L" for the most exacting requirements.

"FREON" REFRIGERANTS

| | |
|-----------------|-----------------|
| "FREON-11" | "FREON-12" |
| "Boiling Point" | "Boiling Point" |
| 74.7°F. | -21.6°F. |
| "FREON-22" | "FREON-113" |
| "Boiling Point" | "Boiling Point" |
| -41.4°F. | 117.6°F. |
| "FREON-114" | |
| "Boiling Point" | |
| 38.0°F. | |

Virginia Smelting Company is distributor for Kinetic's "Freon" Refrigerants.

HOW TO SEAL CASES, INSPECTION PLATES, PIPE OPENINGS



When you seal out moist air, you prevent condensation, corrosion and insulation troubles. The

outstanding seal, the one preferred by service and maintenance engineers, is Permagem. Brown Permagem comes in 2½-lb. and 45-lb. slugs. Adheres to any dry surface. Never hardens; stays plastic from 0° to 350°F.; absolutely odorless. Gray white Permagem comes in rolls containing 80 ft. of ⅜" cords. Seals around wiring; won't attack rubber. Never hardens; odorless; can be painted immediately.

ASK YOUR WHOLESALE
OR WRITE
VIRGINIA SMELTING
COMPANY

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VIRGINIA
Refrigerants

How 20 Industries Use Cooling for Better Products

Industry or Process

How Cooling Is Used

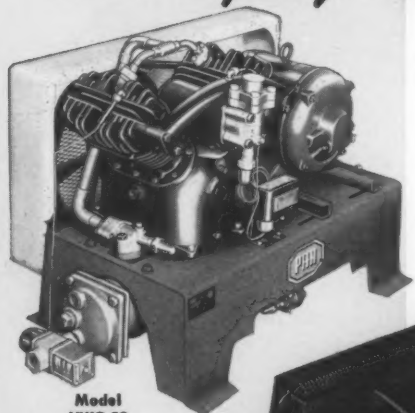
| | |
|-----------------------------|--|
| AUTOMOTIVE | Clean air and controlled temperature and humidity aid in making, finishing and assembling precision parts, and maintaining dimensional fidelity. |
| ABRASIVES MFG. | Controlled air conditions speed manufacturing operation, facilitate grading, improve quality, assure uniformity and permit proper storage. |
| AVIATION | Constant temperature and humidity and clean air are important to the maintenance of close tolerances required in engines, communications equipment, optical devices and instruments. |
| CERAMICS | Air conditioning assures high quality, proper transfers, correct color registration, reduces danger of silicosis by removing grinding and finishing dusts. |
| CHEMICAL | Control of air conditions is important because many processes must be carried out within set atmospheric limits; many chemicals are hygroscopic, pick up moisture and impurities from unconditioned air. |
| DRAFTING ROOMS | Controlled atmosphere increases drafting accuracy and efficiency. Helps prevent shrinkage and curl of blueprints and other materials. |
| ELECTRICAL MFG. | Temperature and humidity control are important in innumerable operations to assure precision finishes, prevent corrosion and rusting, aid calibration and testing. |
| FILM | Controlled conditions are necessary to storage of both raw stock and finished film; emulsions last longer, film does not become brittle and has longer usable life. |
| INDUSTRIAL FIRST AID | Controlled atmosphere relieves nervous tension, reduces infection hazards, increases employee health and comfort. |
| LABORATORIES | Standardized conditions are essential to research, testing and development in any industrial laboratory. |
| LEATHER | Leather processing and storage is improved and increased by air conditioning. |
| LINOLEUM | Precise temperatures and humidity control are essential in the mechanical oxidation of linseed oil; controlled conditions aid in uniformly high quality production. |
| MACHINERY MFG. | Controlled air conditions are essential to keep precision machinery in adjustment, permit fine finishing. |
| MATCHES | Drying of match heads requires controlled air conditions because of the use of hygroscopic and inflammable materials. |
| PLASTICS | Constant control of air conditions is necessary since the properties and workability of many chemicals used change with variations in temperature and humidity. |
| PRINTING | Humidity control is necessary to assure constant moisture content of paper and prevent its stretching or shrinking, aid in color registration and keep uniform quality on long runs. |
| PULP AND PAPER | Humidity control assures constant water content which permits production at high continuous rates. |
| SYNTHETIC FIBERS | From viscose liquid production through finishing of the fabric, conditioned air is essential to large-scale production to insure high production at uniform quality. |
| TEXTILES | Control of temperature and humidity is essential for production of high quality merchandise at economical manufacturing rates. |
| X-RAY DEVELOPMENT | Emulsion and washwater must be kept cool to insure proper detail on the films and consistent results. |

*Modern testing
methods assure...*



PAR and PARmETIC

B.T.U. Capacity Ratings are Always Right!



Model
HWC-50

PARmETIC
Model PM-O



Lynch modern Calorimeter tests
establish accurately PAR and PARmETIC B.T.U.
Capacity ratings as advertised!

When you buy PAR or PARmETIC,
you're sure the B.T.U. ratings are
right—and that the Units will
give trouble-free
dependable performance.

PAR conventional condensing units,
air-cooled 1/6 to 3 H.P., water-cooled
1/2 to 15 H.P., Combination air and
water 1/2 to 3 H.P. PARmETIC sealed
units from 1/8 to 1/3 H.P.

BY COMPARISON—YOU'LL BUY PAR and PARmETIC



PAR AIR
COMPRESSORS



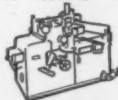
PAR
REFRIGERATION
COMPRESSORS



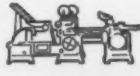
WRAP-O-MATIC
CANDY & COOKIE
WRAPPING
MACHINES

LYNCH

CORPORATION
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TOLEDO, OHIO



MORPAC
PAPER PACKAGING
MACHINES



MORPAC
BUTTER & OLEO
PACKAGING
MACHINES



GLASS FORMING
MACHINES

Circle No. 62 on Reader Service Card for more information
and AIR CONDITIONING • MAY, 1951

COMMERCIAL **Refrigerator** SALES NEWS

Man-Hours, Food Losses, Costs— Are These Things Worth Saving?

By Robert L. Tyler
President, Tyler Fixture Corp.

THE retail food business of the United States is today in the midst of a tremendous change in merchandising practice.

At the heart of this important change, which economically affects every person who buys perishables in the retail markets of the United States, is the method of refrigeration used.

Millions of American housewives are now for the first time able to select rapidly the cut of meat, the type of fresh vegetable and the packaged dairy product which they want without buying unseen from a clerk or without waiting in line to be served less efficiently and sometimes less satisfactorily.

Studies conducted by the United States Department of Agriculture and by independent agencies and corporations have revealed time and again the following factors:

1. Millions of man-hours are saved by the customer by this new method of shopping.

2. Actual dollar savings of magnitude are being made by operators employing this modern merchandising practice. Their savings are reflected in lower prices made possible by—

- a. Reduction of shrinkage of perishable foods at the retail level.

- b. More efficient employment of employees in the store by utilizing the full day for preparation of perishable foods—not just the afternoon peak period.

Open merchandising of perishable foods has been made possible only by the 10 years of hard work done by commercial refrigerator manufacturers in creating equipment which will

maintain preservation temperatures for everything from frozen food to produce in open fixtures. This permits the housewife to reach directly into the cabinet, obtain the package which she wishes, and complete her shopping in what many people estimate to be as low as 20% of the time formerly taken.

From the standpoint of the market operator, such method gives much better control of inventory on all types of perishables, the virtual elimination of shrinkage loss by proper packaging, and an opportunity to reduce the margin of gross profit needed by the effecting of the economies listed above.

Apart from the very vital roll played by the commercial refrigerator industry in the maintenance of equipment now in operation and the production needed for this maintenance, the overall consideration of the continuation of this revolutionary time and dollar saving technique of merchandising demands thorough consideration.

Estimates of the sales of perishable foods in this country range from \$15 billion per year upward. The materials used in making possible the continuation of the program of modernized handling of perishables are small indeed.

The job currently being done by the market operators of America is an enormous one and it is to be hoped that the continuation of this improved program may be permitted during the present emergency.

Save man-hours, cut food losses and cut food distribution costs. All are vital to this nation's economy.

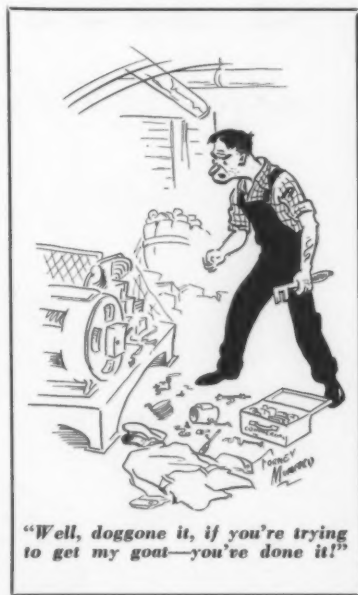
200 HP OF REFRIGERATION COOLS HUGE SUPER MARKET

More than 200 hp of refrigeration equipment is used to satisfy the cooling requirements of the huge new super market, said to be the largest in the Midwest, which has been opened by Joseph Bettendorf in suburban St. Louis.

The building itself measures 160 x 164 feet, and the main portion has an 18-foot ceiling. The steel work supporting the ceiling provides a 6-foot space under the roof, in which the ducts for the air conditioning system were installed.

Hot water coils in one of the air conditioning units provides heat in winter. Radiant heating pipes are laid in the floor under the 15 check-out counters, which are close to the entrance and exit doors.

In summer the market is cooled to a far greater extent than the average store or office. In hot weather the tem-



perature inside may be 20 or 25 degrees less than on the street. By keeping the store really cool, Bettendorf maintains the freshness of the fruits and vegetables being sold.

Approximately one-fourth the heat load in summer comes from the 580 lights in the ceiling. It is nothing unusual for 500 people to be in the store at once, as employees alone number more than 200.

The air conditioning work totals 100 tons of refrigeration. This load is carried by two new Frick "Eclipse" compressors, each with six cylinders

and each driven by a 50-hp motor. Each of the two Marlo conditioning units handles 17,150 cfm of air.

The meat division of this great store extends across the entire rear of the store, and offers both self-service packages and traditional butcher service. A bakery provides customers with breads, cake and pastry so fresh that they may still be warm. A freezer storage holds bakers products to meet unusual demands. Reach-in cabinets contain all kinds of frozen foods.

A total of 628 lineal feet of refrigerated Hussmann cases is used in this market. Each of these cabinets has its own refrigeration unit located in the basement, with the total load of this equipment adding up to 46 hp.

Processing rooms and bulk storage facilities in this new store are controlled by a battery of Frick condensing units ranging in size from 3 to 7½ hp. A tabulation of these units and the areas they cool follows:

5-hp unit—15½ x 9 x 11½-foot dairy cooler held at 38 F, 9½ x 9 x 11½-foot meat tray cooler held at 35 F, and 19½ x 9 x 11½-foot receiving and smoked meat cooler held at 38 F.

5-hp unit—13½ x 9 x 11½-foot frozen foods storage held at -5 F and 11½ x 8 x 10-foot bakery products freezer held at the same temperature.

3-hp unit—39½ x 9 x 11½-foot fresh meat cooler held at 34 F.

3-hp unit—38½ x 9 x 11½-foot vegetable cooler held at 40 F.

3-hp unit—15½ x 11½ x 10-foot bakery ingredients cooler and 17½ x 11½ x 10-foot dough retarder, both held at 35 F.

7½-hp unit—100 x 10 x 12-foot meat processing room held at 55 F.

5-hp unit—45 x 23 x 12-foot vegetable processing room held at 65 F.

Bettendorf's Clayton Road store represents an investment of close to \$1 million. Refrigeration and air conditioning work for this vast merchandising establishment was all laid out, engineered, and installed by L. V. Fleiter Co., Frick distributor in St. Louis.

CHICAGO OFFICE MOVED

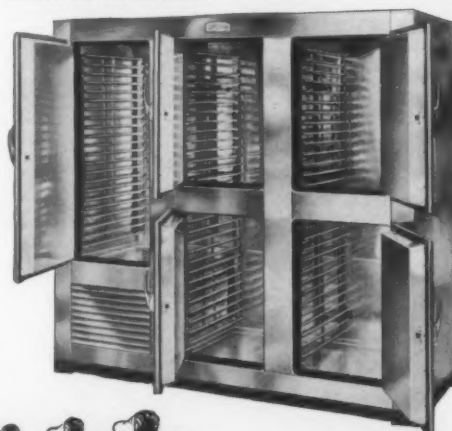
The Northwestern district headquarters and Chicago sales office of Westinghouse Electric Corp. have been moved to a new and permanent location encompassing 45,000 sq. ft. of space in The Merchandise Mart.

STA-KOLD Stainless Steel Refrigeration Your Choice for EVERY PURPOSE

STA-KOLD builds value into every unit. For those who want streamlined smartness, dependable and economical operation at low-cost, STA-KOLD is the answer.



Model RA-70-R
Available from 20 to 70 cu. ft.
Remote and Self-Contained



Model RD-65-S
Dough Retarder or Salad Refrigerator
Available from 42 to 70 cu. ft.
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Pioneers of Stainless Steel Refrigerated Cases
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Distributor, dealer or service engineer, you'll do a bigger business with *Texaco Capella Oils*. Designed especially for compressor lubrication, these fine oils assure trouble-free performance, more refrigeration per dollar, and lower maintenance costs.

Benefits like those build repeat sales . . . bring in new business. Why not get your share of it?

Texaco Capella Oils come in popular-size 1-quart, 1-gallon and 5-gallon sealed containers. You can get them in every needed viscosity. And remember — leading compressor manufacturers approve *Texaco Capella Oils*. That's additional evidence of their superior quality. The Texas Company, 135 East 42nd Street, New York 17, N. Y.



TEXACO Capella Oils

FOR ALL AIR CONDITIONING AND REFRIGERATING EQUIPMENT



TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. See newspaper for time and station.

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MAY, 1951 • COMMERCIAL REFRIGERATION

THE PRACTICAL REFRIGERATION APPLICATIONS MANUAL

By Harold Smith

Readers are invited to submit their problems to this department. Each letter of inquiry will be answered personally by the author. The most interesting ones will be published in these columns. All problems should be clearly and completely stated and addressed to: COMMERCIAL REFRIGERATION, Manual Dept., 1240 Ontario St., Cleveland 13, Ohio.

PROBLEM

I have been called upon to replace an ammonia coil in a large drinking water cooler. This cooler contains 1300 feet of 1 1/4-inch pipe which is immersed in the water supply.

"The old coil appears to be made of galvanized pipe. That is, the outside has a galvanized coating but I am not sure of the inside.

"To make this coil we will have to weld the pipe and roll it. Please advise if ordinary galvanized pipe is suitable and, if so, with what we should weld it. If it is not possible to use the above mentioned material, what should be used?"

SOLUTION

We are inclined to believe that the pipe coil to which you refer may have been constructed of extra heavy pipe with heavier walls than is ordinarily used for water pipe. It has been common practice to use heavier pipe for ammonia refrigeration purposes. However, you may find that this is standard water pipe, as such pipe has sometimes been used for this purpose.

We imagine the galvanized finish is only on the outside, being placed there to prevent rust on the outside of the coil. If it is impossible to secure the exact type of pipe originally used in the coil, we suggest that you secure a good iron pipe, which should work out satisfactorily for this application.

We also suggest that you go to a supplier of welding rod and secure from him the proper rod for welding the galvanized pipe. Distributors of welding supplies have all types of

rods for use on various materials to be welded. If you explain to them just what you are planning to do they can recommend the proper rod to be used for this particular purpose.

We do not believe you will run into any great difficulty in making this repair unless there are other conditions that you uncover after removing the coil and starting to make the replacement.

Amended Copper Order Clarifies Some Uses

THROUGH the issuance of a recent amendment to Order M-12, NPA established the permitted use of copper and copper-base alloys for the second quarter of 1951. Fabricators of copper will be allowed to use 75% of their base period rate of consumption, as compared with 80% in March.

Producers of brass and copper wire mill products and producers of foundry products will continue at their current rates of 80 and 100% of base period consumption, respectively.

Changes of significance to manufacturers of refrigeration and air conditioning equipment included under List B of the amendment are:

Under "household electrical appliances—home and farm freezers"—the following wording has been deleted: "including the low side refrigerant circuit."

Under "refrigeration and air conditioning machinery and equipment," the following clause has been deleted from the first section "(except in condensers for open-type air cooled condensing units and evaporative condensers for Freon refrigeration or air

conditioning systems and the 'low side' refrigerant circuits for ice cream cabinets, frozen food cabinets, and 'wet type' bottled beverage coolers)."

This means that copper tubing can now be used in these applications, where previously such uses were prohibited.

The use of copper is now permitted in the manufacture of shell and tube or shell and coil condensers, and shell and tube or shell and coil water chillers, for water courses, either straight or finned tube, where the refrigerant is in contact with the tube.

Under "water coolers" the use of copper is extended to include faucets and faucet connections.

The use of copper is now permitted in the manufacture of dehumidifiers for operational parts where the properties supplied by the copper are essential or where necessary for electrical conductivity.

G-E SEPARATES MAJOR, SMALL APPLIANCE DEPTS.

Establishment of two separate departments to be responsible for the manufacture and sale of major appliances and small appliances has been announced by the General Electric Co.

The two departments have been created out of the Appliance & Merchandise Department "more effectively to meet the demands of the growing market for household electrical equipment," Roy W. Johnson, executive vice president, said.

Clarence H. Linder has been appointed general manager of the Major Appliance Department and Charles K. Rieger becomes general manager of the Traffic Appliance Department.

The Major Appliance Department will be responsible for refrigerators, food freezers, ranges, water heaters, washers, ironers, dryers, dishwashers, garbage disposers and cabinets. The Traffic Appliance Department will handle irons, toasters, roasters, sandwich grills, waffle irons, mixers, fans, clocks, vacuum cleaners, automatic blankets, heating pads, heaters and heat lamps.

HOSPITAL COOLING IS LIONS CLUB PROJECT

The Lions Club of Moncks Corners, South Carolina, will underwrite the installation of air conditioning equipment in the operating rooms of the Berkeley County Hospital as its project for 1951.

**greater
resiliency**

Jarrow...

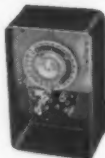
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Made From Crude Rubber

Always Demand These
Quality Gaskets

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420 N. LA SALLE ST. CHICAGO 10, ILLINOIS

PARAGON DEFROSTING TIME SWITCHES

300 M
SERIES



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For Commercial Defrosting

• Electric Heat • Hot Gas
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UNIT COOLERS • WALK-IN BOXES
FROZEN-FOOD DISPLAY CABINETS
LOCKER PLANTS • REACH-IN CABINETS
• FUR STORAGE VAULTS •

Paragon 300M series offers accurate, easy-to-set synchronous-motored time switches for up to 8 defrost periods per day, of two hours or less... one of a wide range of dependable Paragon Time Controls.

**AMERICA'S LARGEST EXCLUSIVE
MANUFACTURER OF TIME CONTROLS
FOR ALL USES**

MAKERS OF THE FAMOUS

de-frost-it

FOR DOMESTIC
REFRIGERATORS • ONLY



\$9.95

Paragon ELECTRIC COMPANY

1688 TWELFTH STREET • TWO RIVERS, WIS.

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LOW TEMPERATURE...

Continued from page 32

celerating agings of aluminum and steel, and retarding aged hardening of aluminum rivets and sheet, are some of the common applications of low temperature equipment.

Another interesting application was in the grinding of optical lenses. In order to hold the lens conveniently, a block of steel is employed and the optical glass is cemented to the steel block by the use of a pitch material. This pitch material is soft when warm but becomes brittle at low temperatures. In order to facilitate the removal of the lens from the pitch block, the use of relatively low temperatures to harden the pitch has been employed.

With the advent of aircraft flight at extremely high altitudes and at low temperatures, it became necessary for the oil and petroleum industries to develop lubricant fuel which would operate at extremely low temperatures. The use of low temperature cabinets by the oil industry has been greatly accelerated and considerable strides have been made in those fields as a result of the ability to duplicate low temperature conditions right in the laboratory.

Low Temperature and High Humidity Cabinets—These facilities have been developed to combine the features of low temperature and high humidity in a single piece of equipment when it is desired to duplicate these ranges of temperature and humidity, but without the feature of altitude stimulation. The general range of applications for this type of equipment is duplicated in each of the four varieties which have preceded this one. It is merely a new combination of the variables described above.

FROZEN MERCURY...

Continued from page 34

ceramic forms are ready to be fired. While mercury freezes at -40°F , the acetone is cooled down to -135°F because mercury is worked more easily the harder it is.

Here are the highlights of the process. Mercury at room temperature is poured into a steel die which has the contour of the desired part. The filled die is suspended in the acetone

for about two minutes to freeze the mercury. The die is then lifted from the acetone and the frozen mercury pattern is removed. The pattern is now attached to a frozen mercury part, known as a sprue, which forms the channel through which the molten metal later will be poured. For economical casting, several frozen patterns are attached to one sprue. This cluster remains suspended in the second acetone bath (the storage box).

The dipping process in ceramic slurries takes place in the third box, where a temperature of -60 to -70°F is maintained by a mechanical re-



frigeration system using Freon-22 as refrigerant. These ceramic slurries are non-aqueous, and an ingredient in the mixture evaporates in the low temperature, leaving a hardened ceramic mold around the frozen mercury pattern.

Upon completion of drying, the clusters of ceramic molds are set in a basin where the mercury, upon returning to room temperature, flows out of the mold. The melting is aided by squirting mercury at normal temperature against the frozen pattern. The mercury is of course reused.

Many of the engineering and designing details of this intricate refrigeration system were accomplished through the cooperative efforts of Ramsey-Bennett Co., Cleveland, designer and builder of low-temperature industrial chambers.

Thus the Mercast process, in widening the scope of metal casting techniques, at the same time opens up new avenues for the application of industrial refrigeration equipment.

**BUY FROM YOUR
REFRIGERATION WHOLESALE**



MORE CAPACITY—The capacity of an evaporator drops rather sharply when it is used at low temperature levels because of heavy frosting. The THERMOBANK evaporator is rated under actual low temperature operating conditions, guaranteeing full rated capacity on the job.

THERMOBANK SAVES MONEY!

NO EXTRA MAINTENANCE—THERMOBANK defrosts itself. Since the THERMOBANK is so infallibly automatic, eliminating electric heaters, brine and water sprays, it does away with extra maintenance labor.

THERMOBANK SAVES MONEY!

LESS OPERATING TIME—An ice-free evaporator gives more compressor capacity. This cuts sharply the operating time of the system and frequently permits the use of a smaller size compressor.

THERMOBANK SAVES MONEY!

NO SPOILAGE LOSS—Radical temperature changes in low temperature rooms cause serious dehydration. In the THERMOBANK the freezer temperature is practically constant. This eliminates deterioration and weight losses.

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CONDENSERS Air Cooled, Water Cooled, Evaporative - WATER COOLING EVAPORATORS - BLAST COOLING COILS - BLAST HEATING COILS.

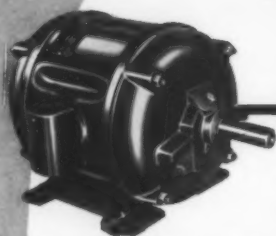
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and AIR CONDITIONING • MAY, 1951

Wagner®
ELECTRIC MOTORS
... the choice of leaders
in industry

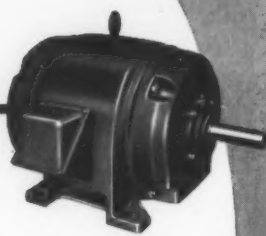
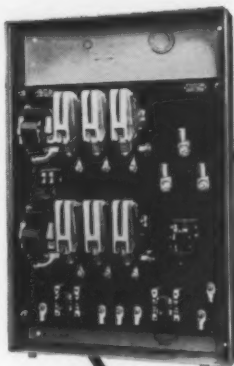
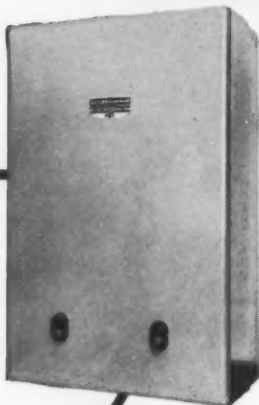
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Increment Motor and Starter Combination

... most economical for applications where
reduced starting current draw is required

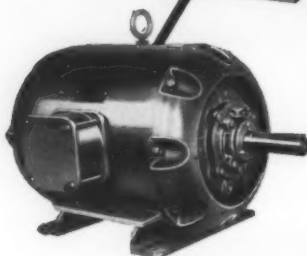


Open General Purpose Motor
Normal or High Torque



Splash-Proof Motor
Normal or High Torque

Explosion-Proof Motor
Normal or High Torque



Totally-Enclosed
Fan-Cooled Motor
Normal or High Torque



easy does it...

You can meet locked current restrictions by limiting the in-rush of motor current during the starting period with the low cost Wagner Increment Motor and Starter "Package". This motor and control combination is excellent for use on any application where reduced current draw at start is required.

Wagner polyphase motors, both normal and high torque, are wound with two circuits in parallel. When the increment starter is operated, its first magnetic contactor closes and puts half of the motor winding across the line, so that the motor draws only approximately 60% of its normal locked rotor current from the line. At the same time the circuit is closed to

an adjustable pneumatic timer and at the completion of the timing cycle the second magnetic contactor closes, putting the second half of the winding in parallel with the first.

The Wagner Increment "Package" is economical to install, and makes possible the use of high grade magnetically operated equipment at a low purchase price.

Why not investigate this Wagner combination today? Write for full information.

Consult the nearest of Wagner's thirty-one branch offices, in all principal cities, for expert advice on your motor application problems.

Wagner
Electric Corporation

1891 **WE** 1951

WAGNER ELECTRIC CORPORATION

6442 Plymouth Ave., St. Louis 14, Mo., U.S.A.

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS — AIR AND HYDRAULIC

BRANCHES IN 31 PRINCIPAL CITIES

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MAY, 1951 • COMMERCIAL REFRIGERATION

"HOT SEAT" . . .

Continued from page 33

from the floor, and the duct is inside the cab, so that only the short section from the roof to the cooler needs insulation. Placing the cooler unit on the roof of the cab also simplifies maintenance.

The cab conditioning unit operates with 75% return air from the cab, and 25% make-up air. This make-up air is obtained from the shovel conditioning unit and already has been filtered. However, it is again drawn through a 2-inch thick wire mesh filter and four activated carbon fume removal canisters before being mixed with the return air.

25% Make-Up Air Needed

The 25% of make-up air is considerably more than is required for ventilation, but is necessary in order to pressurize the cab and to prevent infiltration of dust and dirt, fumes and gases. After passing through the cold-section intake, the mixture of return air and make-up air is then drawn through another 2-inch filter, through the evaporator and then delivered to the diffuser in the operator's cab to complete the air flow cycle.

Motor Is Protected

The unit is air-cooled; air is used for condensing the refrigerant and no water is required in any way. A large, double-inlet, double-width squirrel-cage fan pulls air from the shovel machinery compartment and discharges it across the condensing coil. A 5-hp motor drives, through V-belts, the compressor, condenser air fan, and ventilation air fan for the motor and control enclosure.

A forced ventilating system provides 60 to 62 F air from the conditioning section of the cooler into the motor casing. Dust, dirt and fumes have been removed from this air and the brushes and moving parts of the motor turn over without undue wear, and in air free from corrosive gases. The $\frac{1}{8}$ -hp air supply fan is in the cool air stream to prevent overheating.

Operation of the unit is independent of operation of the shovel itself.

**BUY FROM YOUR
REFRIGERATION WHOLESALE**

AUTO-LITE

TEMPERATURE INDICATORS

For your specific needs!

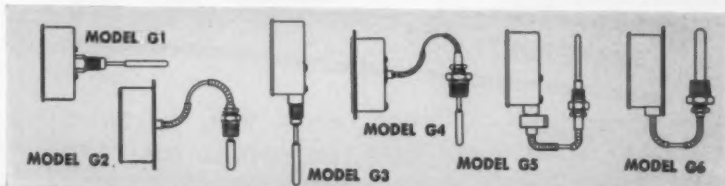
- ★ Precision-built indicators provide accurate temperature readings.
- ★ Low-cost protection . . . due to large, specialized production.
- ★ Wide selection of dial ranges to meet specific requirements.
- ★ 6 stock types available as shown.

THE ELECTRIC AUTO-LITE COMPANY
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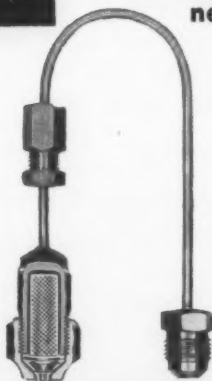
MODEL "G"

Select the type that is best for your purpose. $3\frac{1}{2}$ " dial; evenly calibrated scales. From \$18 up.



1 ALLIN CAPILLARY TUBE

serves
MANY
needs!



**Adjustable!
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1153 West Grand Ave., Chicago 22, Ill.

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SHANK REFRIGERATION PRODUCTS

Provide maximum service
under toughest operating
conditions.



RELIEF VALVES
For Ammonia and Freon. One piece body design—rust-proof finish. Internal construction—stainless steel—will not corrode. Positive relief action. Pressures from 75 to 400 lbs.

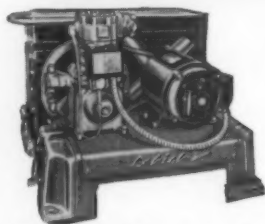
See Your Jobber—or Write Us for Prices.

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**ALL-STEEL
GAUGE SETS**
All-Steel Construction. Automatic shut-off of liquid in case of glass breakage. Composition packing rings give long life, no-leak seal.



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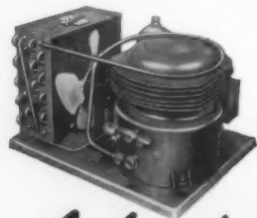


PACKAGED UNITS— $\frac{1}{4}$ thru $\frac{1}{2}$ HP (F-12 and F-22)

HEAVY DUTY — Air Cooled — Water Cooled — Combination Air-Water — $\frac{1}{2}$ thru $7\frac{1}{2}$ HP

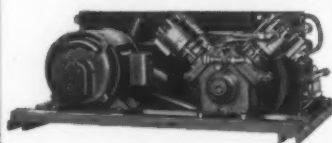
New Lehigh **HERMETICS** — Low Torque and Capacitor — $\frac{1}{4}$ thru $\frac{1}{2}$ HP

*Automatic **HIGH-SIDE DEFROST UNITS** — $\frac{1}{2}$ thru 3 HP



THE UNITS YOU NEED TO KEEP THE WHEELS TURNING!

Sales for you—service for the user. Ratings that you can guarantee—quality that turns cold demands into warm friendships. And don't forget that those new Lehigh **HERMETICS** open up many new markets for you!



... for body builders

TRUCK UNITS

The **LEHIGH TEAM** spent five years analyzing truck requirements and has come up with the finest equipment on the market for this purpose. These units are rugged, compact and flexible. We can help you close these good business prospects!

Available $\frac{1}{2}$ thru 3 H.P.

Lehigh

BLU-COLD

Lehigh Manufacturing Co. Plant: LANCASTER, PENNA.

Export Department—39 Broadway, New York 6, N. Y.

LETTERS

Wants to Make a Profit

EDITOR:

Please forward us C.O.D. one back copy of **COMMERCIAL REFRIGERATION** and **AIR CONDITIONING**.

The only way I have of identifying the copy I want, is to tell you that it contained an article on how to make a profit in business and had a profit chart, or rather a chart to calculate the selling price of an article to make a certain percentage of profit. The cover may have been orange, and it may have been the October or November issue of 1950.

May I have your cooperation in forwarding this to me at an early possible date.

Thank you in advance.

RAYMOND O. ROBITAILLE

Manager

Nordan Engineering

New Bedford, Mass.

The issue to which Mr. Robitaille refers was our November, 1950, issue. A limited supply of this special "How to Run Your Business at a Profit" issue still is available. Single copy price is 30 cents.

Manufacturers' Rep List

EDITOR:

We would greatly appreciate your sending us the list of Manufacturers' Representatives which you have compiled as a service to the Refrigeration and Air Conditioning Industry.

MAX A. MYERS

Sales Manager

Refrigeration Engineering Corp.

Philadelphia, Pa.

We are glad to send Mr. Myers a copy of our Manufacturers' Representatives list, a few copies of which still are available.

Parts for Kel-Kold Units

EDITOR:

Can you furnish information as to where parts for Kel-Kold units can be purchased? These units were manufactured by The Kel-Kold Co., Inc., Johnstown, N. Y.

M. J. McMANUS

Pacific Coast Refrigeration Co.

Oakland, Calif.

We have managed to get in touch with Mr. Perchan of Perchan & Co., Cleveland, Ohio and have been advised that while this company at one time had a small stock of repair parts, it now has no parts at all for resale. Mr. Perchan said that he doesn't know where it would be possible to get repair parts.

Larkin HYDRO-MISER Cooling Tower Now in Mass Production

**BUY NOW AND AVOID
SEASONAL RUSH**

Immediate Shipment

AN ENTIRE PLANT is now devoted exclusively to the manufacture of the LARKIN Hydro-Miser Cooling Tower as a result of nation-wide acceptance of this relatively new LARKIN product.

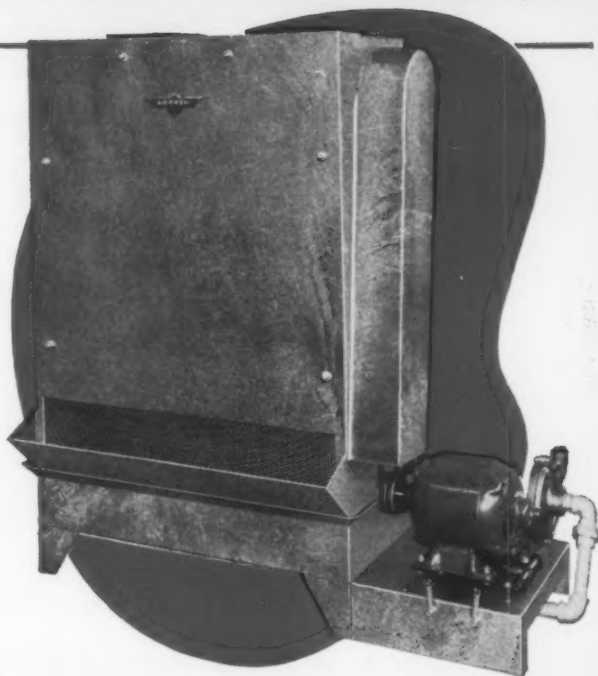
Already used in hundreds of installations where water-saving is essential, the LARKIN Hydro-Miser Cooling Tower has proved its worth.

Designed to save up to 95% on water used with air conditioning and commercial refrigeration units, the LARKIN Hydro-Miser Cooling Tower soon pays for itself.

Answer to Serviceman's Prayers

LARKIN engineers perfected the Hydro-Miser by keeping the serviceman in mind. Here's what we mean. . . .

One-piece grill, splash guard and panel on 3, 5, and 7½-ton models • No screws or bolts on panels—Larkin latches have replaced them • Flange-type, self-aligning graphited bronze bearings on outside (exterior oil cup provided where center bearings are required) • Easy, simplified installation — minimum piping • Double ball bearing pumps and single-drive heavy-duty motors • Eliminator section slides out for easy cleaning • Wetted surface assembly also easily removable • Large orifice-type bronze spray nozzles easily removed for cleaning.



Hot-Dip Galvanized After Fabrication

LARKIN's Hydro-Miser Cooling Tower is protected inside and out by hot-dip galvanizing after fabrication—including fans, scrolls, panels and frames. Positive protection against rust. To give extra protection, acid-resistant mastic paint is applied to entire inside of unit after galvanizing.

This all adds up to an all-round quality in keeping with LARKIN COIL's record for high-quality products at reasonable prices.

A full range of models is now available for immediate shipment. Order now from your wholesaler and avoid the seasonal rush just ahead.

LARKIN

519 MEMORIAL DRIVE, S.E.
ATLANTA, GEORGIA



COILS INC.

ORIGINATORS OF
THE CROSS-FIN COIL



no trick to it !

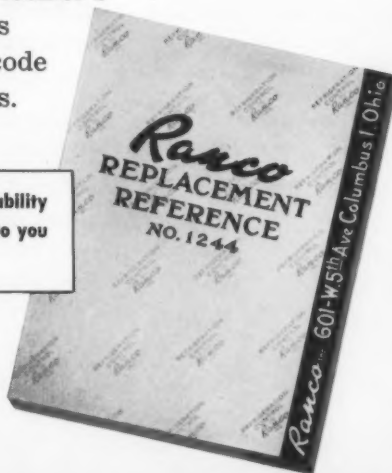
it's easy to find the exact replacement control when you specify *Ranco*...

See the Ranco Replacement Reference at your wholesaler's today. It lists all refrigeration manufacturers, plus trade names and the Ranco Replacement Control code number. Available only through Ranco wholesalers.

✓ **check with
Ranco first**

- specialists in refrigeration
- less stock to carry
- dependability
- more profit to you
- greater customer satisfaction

Ranco Inc.
COLUMBUS 1, OHIO



WORLD'S LARGEST MANUFACTURERS OF REFRIGERATION CONTROLS

Circle No. 74 on Reader Service Card for more information

MAY, 1951 • COMMERCIAL REFRIGERATION

HERE'S HOW!

Edited by
Warren W. Farr

The Mysterious Case of The Blackening Meat

We received a letter the other day from F. J. Roller of F. J. Roller Refrigeration Co., Akron, Ohio, telling us about a peculiar problem in meat storage which he encountered recently.

It seems that the meat in this store's bulk cooler was turning black, and nobody could figure out why. But let's let Mr. Roller tell it in his own way:

"I came across an unusual fact the other day. At least it was unusual to me, and I thought it might be of interest or benefit to some one else.

"The management of a large chain super market, for whom I service equipment, called recently and complained that meat kept in their walk-in storage box was turning black.

"I checked the system over and could find nothing wrong.

"I was puzzled as to what could be the cause and rechecked to make sure that I had overlooked nothing. Switch setting was OK, gas OK, temperature in the cooler was 34 degrees. I checked the humidity and found it a little low. I reset the control to see if I could better the humidity by a closer differential and slightly higher range setting.

"I returned the next day and found the humidity up, but the condition was no better. Some meat which had been de-

*I do it
this way...*

I PLAYED around with copper tubing for 21 years before I caught on to this trick.

Now I use an ordinary adjustable wrench to round copper tubing that has become slightly flattened. Run the thumb screw on the wrench up until the jaws of the wrench touch the tubing. Then work the wrench around and around the tubing, or back and forth in a swinging motion. Presto, the tube is round!

Ed L. Bailey, Macon, Ga.

livered just the day before already was turning black.

"The cooler was equipped with ultraviolet lamps, and I thought that possibly they were becoming dead.

"To make a long story short, one of the chain supervisors came around and said that they had had a similar occurrence at another market once and had found the trouble to be in the fact that someone had turned on a large roof exhaust fan and this had overpowered the natural draft of their overhead gas heaters and pulled the burnt gas fumes back into the store. Some of the fumes settled in the walk-in cooler, which was not opened much, and that was what turned the meat black.

"I promptly checked the exhaust of the store on which I was working, and sure enough it was running. We immediately turned it off (it was not supposed to be on anyway) and everything then was OK."

Calling Cards Can Be Salesmen

Your business cards, or calling cards, can do a real selling job for you if you only give them a little thought. They can do this by serving as a constant reminder of your products or your services, providing they are so designed as to have some lasting value.

Calling cards need not be expensive to be unusual. A calendar, a list of special events, a schedule of ball

games for the "home team", will give the card a value beyond that of your name and address, and will keep it from being thrown away.

That's the whole secret of "remembrance advertising" on which a number of national sales promotional organizations have built a thriving business. And, on a smaller scale, it can prove of real dollars-and-cents value to you.

One salesman we know has a portrait of himself printed on the reverse side of his card. This helps the prospect identify the man who called on him. Think back on your own experience—how many times have you found it difficult to match a certain name with the face that went with it?

*I do it
this way...*

ONE way to stop noisy radio interference that is caused by the operation of any piece of refrigeration equipment is to run a length of wire from the metal frame of the condensing unit or other metal part of the refrigerator to the top of the motor, being sure that both ends of the wire make a metal-to-metal contact.

Some motors have rubber mounts and make quite a bit of static noise in radios.

W. Tegner, Oakland, Calif.

A picture of your place of business, or your product, also will help convey that "different" impression to your card.

One enterprising dealer uses the reverse side of his card to give the "walk out" who insists on seeing another brand something to think about when he is comparing your merchandise or service with your competitor's. A few pointed questions for him to check off will do the trick.

When the prospect goes into your competitor's place of business he may

*I do it
this way...*

EVACUATING refrigerant cylinders completely sometimes is a bit difficult. Here is the way I handle this problem.

After emptying 145-pound Freon cylinders in the usual manner, I then evacuate them by connecting them to a condensing unit. The amount of liquid Freon obtained in this manner will surprise you.

Joe Hartinger, Green Bay, Wis.

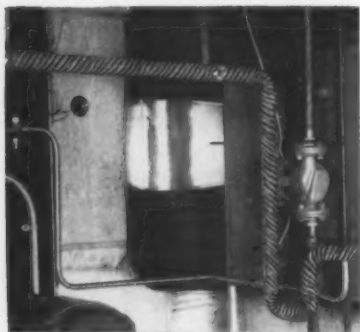
(Editor's Note: In following this procedure it is extremely important to guard against contamination of the refrigerant.)



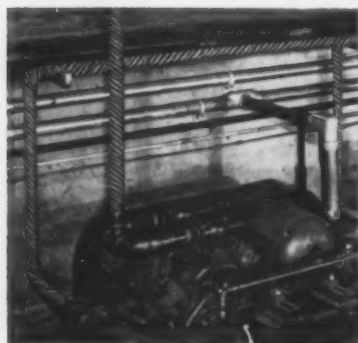
Positively Controls CONDENSATION DRIP

Prevents rust and corrosion, thus prolonging pipe life.

Just wrap cork-filled NoDrip Tape around cold water pipes, suction lines and joints running from refrigerating machines to condensers. Also used on refrigerant lines in air conditioning systems and on cold water pipes in basements.



NoDrip Tape is effective immediately. It can be painted. Clean and easy to put on, without tools, brads, etc.



CONTRACTORS: Include NoDrip Tape protection in your estimates, not only to stop dripping, but for the sake of good appearance on finished installations.

Roll covers about 10 feet of $\frac{1}{2}$ " pipe. \$1.69 list. Higher west of Rockies and Canada.

Order through your supply house or write for information.

J. W. MORTELL CO

Technical Coatings Since 1895

553 Burch St.

Kankakee, Ill.

Circle No. 75 on Reader Service Card

98

ask one of these questions first thing. If your competitor's salesman doesn't know the answer, you've won Round 1 in your sales battle.

What Is a Serviceman?

Service can be aptly described as anything which is done to meet the needs of customers. And the importance in our industry of the man who renders this service cannot be over-emphasized.

But just what makes a good serviceman? What qualifications must he possess?

First he must be of good temperament, and able to get along with people—not only with customers but with members of the sales department as well.

He must be a diplomat—have nice "bedside manners," if you please—because he normally meets the customer when the customer is in trouble, and he must be able to smooth the ruffled feathers of those who are prone to regard any service calls simply in terms of additional expense.

He must be a neat workman and be neat in his personal appearance. He must be sales-minded always. At

WANT TO EARN \$5?



You don't have to be a writer or a literary genius! Just jot down some of the shortcuts you've developed in your maintenance or installation work and send them to **HERE'S HOW** EDITOR, COMMERCIAL REFRIGERATION AND AIR CONDITIONING. Your \$5 will be paid promptly when your maintenance tip is published in the magazine. Let's hear from you!

times he must be a good bill collector.

And last—but far from least—he must be a good practical application engineer, with a working knowledge of a widely diversified range of cooling applications.

TAC does what no other tool can do!

AT LAST! AN OPEN-END RATCHET WRENCH — the world's first true universal wrench. A patented design for connections on tubing, rods, piping, conduit, studs, etc. Sixty-four socket sizes from $\frac{3}{8}$ " to 4". Smallest effective ratcheting arc yet— 3° to $7\frac{1}{2}^\circ$. TAC will also do every job any ordinary ratchet wrench will do; one TAC set replaces literally dozens of single-purpose hand tools.

makers of
advanced tools
for industry



TAC is the registered trademark of

TUBING APPLIANCE CO.

7112 South Victoria • 10321 Anza Ave. • Los Angeles, Calif.

Circle No. 76 on Reader Service Card for more information

MAY, 1951 • COMMERCIAL REFRIGERATION



They Weren't Stubborn... They Just Didn't Believe It Was Impossible

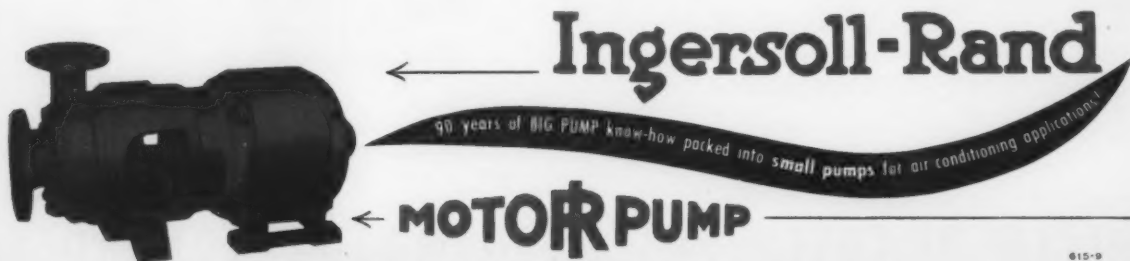
Thank goodness there are still fellows around who aren't satisfied with just "good enough"!

Most people in the air conditioning trade figured that the various types of pumps used to recirculate water in air conditioning systems were doing a good job. And when compared, pump for pump, this was true. But then some hard-to-convince engineers at I-R reasoned that if they could design a *smaller* pump that would do the same work as ordinary pumps of *higher* horsepower . . . *that* would really be something. Such a pump would save on first cost. It would have the operating economy of a *smaller* pump. Also, it would bring down installation costs, while doing a better all-around air conditioning job.

So the "unbelieving engineers" at I-R went to work.

When they told us, "Here it is," the skeptics wanted proof. Then they showed us improvements in design, construction and materials. What's more, they produced a line of Ingersoll-Rand MOTORPUMPS which, size for size, proved to be *more efficient and reliable* than any other type pump on the market!

The I-R MOTORPUMP has already opened the eyes of many architects, designers, and air conditioning contractors. It's available out of warehouses across the country. And these same outlets offer service on every I-R MOTORPUMP specified or installed. Get the facts now . . . ask your nearest I-R distributor or representative about them. Meantime, write for free descriptive literature. Ingersoll-Rand Company, 11 Broadway, New York 4, New York.



Circle No. 77 on Reader Service Card for more information
and AIR CONDITIONING • MAY, 1951

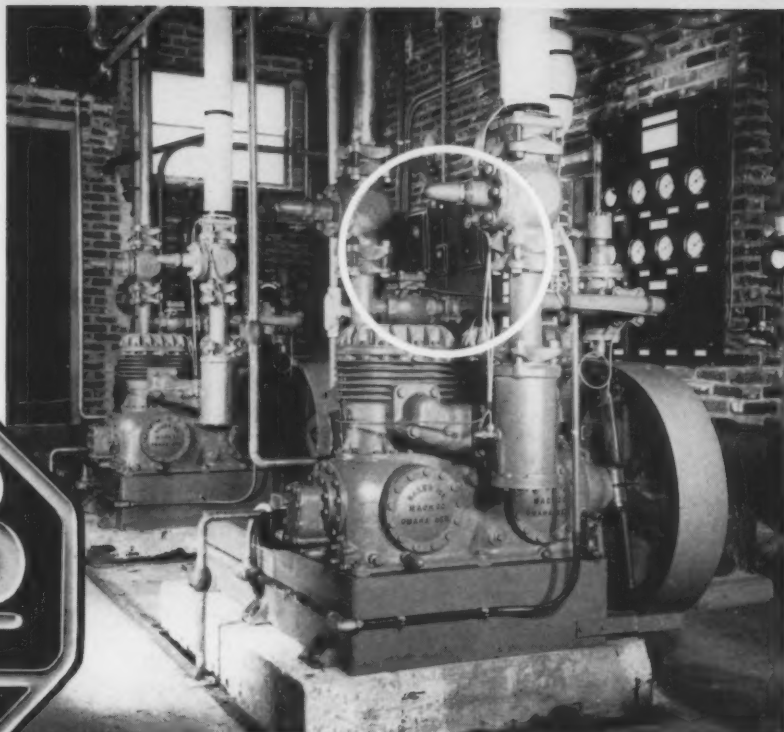
615-9

Baker compressor units, equipped with Allen-Bradley motor starters, installed in Westmont Theater, Philadelphia, Pa.



BAKER COMPRESSOR UNITS

equipped with
**ALLEN-BRADLEY
TROUBLE FREE
MOTOR
CONTROLS**



Why are Allen-Bradley starters so popular for refrigeration and air conditioning service? . . . Because they are trouble free. Only ONE moving part. No pivots, pins, or bearings to corrode or stick . . . no jumpers to break. You install them . . . and forget them!

No contact maintenance . . . Allen-Bradley patented silver alloy contacts never need cleaning, filing, or dressing.

Dependable overload relays . . . Allen-Bradley thermal relays are accurate and always dependable . . . even after long service.

The Allen-Bradley trademark stands for millions of trouble free operations.

Allen-Bradley Co., 1340 S. Second St., Milwaukee 4, Wis.

Typical Refrigeration Controls

PRESSURE AND TEMPERATURE CONTROLS



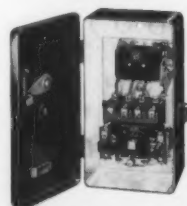
A-B Bulletin 836 pressure control and A-B Bulletin 837 temperature control. Accurate, rugged, compact units.

AUTOMATIC STARTER



A-B Bulletin 709 solenoid starter. Note white interior for ease of wiring.

COMBINATION STARTER



A-B Bulletin 712 disconnect switch type combination starter. Saves installation time.

ALLEN-BRADLEY SOLENOID MOTOR CONTROLS

Circle No. 78 on Reader Service Card for more information

PLAY IT SAFE!

ABANDONED BOXES SPELL DEATH

By George J. Schuld

International Safety Director, RSES

ONE of the worst hazards in our industry is the careless habit many dealers or service firms have of leaving discarded refrigerator cabinets in accessible places without removing hinges and latches.

Such abandoned units seem to have an irresistible—and often fatal—attraction for children, who find them an ideal hiding place when playing cops-and-robbers, hide-and-seek, or similar childhood games.

All too often when a child crawls into such a cabinet either he deliberately closes the door behind him, or else it swings closed and latches of its own accord. The rest is all too obvious. Frequently the child is not missed by his playmates or his parents until it is too late—and another life has been snuffed out that could have been spared through just a little time and effort on the part of the refrigeration firm.

It takes only a few minutes to remove the hardware from any discarded refrigerators on your premises. If for some reason this is impractical, the least you can do is to store these cabinets with their doors up against a wall, or in some other way so that access to the interior is impossible.

Since November 1946, reports on 46 deaths by suffocation in this manner have reached the Safety Committee office. Seven more incidents were reported in which the trapped children were discovered in time to be saved. This surely is not the entire list, for there doubtless are many cases about which the Safety Committee never hears.

Stop and think! Do you want to be responsible for the death of an innocent child—maybe your child—just because you were too negligent to take such simple preventive measures?

E. D. HARRINGTON DIES

Elliott D. Harrington, recently appointed vice-chairman and secretary of the Defense Projects and Priorities Committee of General Electric's Small and Medium Motor Divisions at Schenectady, died suddenly April 1 of a heart attack. He was 54 years old. Harrington played a prominent role in G.E.'s work in the electric motor field and was a pioneer in the company's air conditioning and commercial refrigeration activity.

FLORIDA FIRM WILL REPAIR HERMETICS

Acme Refrigeration Co., 610 27th St. South, St. Petersburg, Fla., has announced that it is entering the hermetic repair field in that area. Jack Salter is president and engineer of the company. The company also will rebuild open-type compressor units. Shop area covers 1600 sq. ft. This is said to be the first hermetically sealed rebuilding facility in the west Florida area.

EDGAR MORRIS SALES ADDS U. S. AIRCO LINE

Edgar Morris Sales Co., 712 13th Street, N.W., Washington, D. C., has been appointed a distributor by United States Air Conditioning Corp. for window units, consoles and store conditioners.

The sales organization, headed by Edgar Morris, president, and George Kindley, vice president, has been active as an appliance distributor for a number of years and has recently expanded its commercial refrigeration and package air conditioning department under the direction of Thomas Shotton, Jr.

Circle No. 79 on Reader Service Card

NO Other Line Gives You
So Much Satisfaction,
Quality, Safety, Economy!

OK SAYS **UL**

UNDERWRITERS' LABORATORIES
on the Complete Line of
**RAPID Refillable
DEHYDRATORS**

(SIZES 5 CU. IN. TO 200 CU. IN.)

QUALITY and SAFETY, requirements of the industry, are assured you by this Underwriters' Laboratories listing. Lower first cost and trouble-free operation provide maximum **ECONOMY**. Insist on **RAPID Refillable Dehydrators**!

WRITE FOR CATALOG AND PRICES
(Give Wholesalers' Name)

DESIGN-ENGINEERED
FOR RUGGED SERVICE
Fine PRODUCTS CO.
185 N. WABASH AVE., CHICAGO 1, ILL.



Prest-O-Lite HALIDE Trade-Mark Leak Detector



Quick—Always ready for use. Lights instantly. Locates exact source of leak with a few sweeps of test hose.

Sure—Reacts instantly to smallest concentrations of all non-combustible halide refrigerant gases commonly used in domestic and industrial systems.

Simple—Easy to use anywhere. No delicate parts to get out of order.

Price (less tank) . . . **\$14.50**

"Prest-O-Lite" is a registered trademark of Union Carbide and Carbon Corporation.

See your jobber or write us for further information. Linde Air Products Company, a Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y.

Order from your local Jobber

Circle No. 80 on Reader Service Card for more information

"Prove the Need and the Sale Takes Care of Itself!"

FOR ACCURATE INFORMATION ON
RELATIVE HUMIDITY and
TEMPERATURE...RELY ON

Bendix- Friez

When your customers see the facts and figures, your selling job virtually disappears. With precision-made, dependable Bendix-Friez instruments you can demonstrate with on-the-spot readings or recordings exactly how much and where your customers need temperature and humidity control for maximum comfort in the home, maximum efficiency in industrial operations. Bendix-Friez instruments are built to U. S. Weather Bureau standards by the world's oldest and largest manufacturer of fine meteorological equipment. Write for complete information.

BENDIX-FRIEZ

MODEL 160

Portable Humidity and
Temperature Recorder

3" x 5" charts, 10 or 30
hour records. Modern de-
sign... handy for small
space and difficult loca-
tions... built to meet
unusual conditions.



BENDIX-FRIEZ

Hygro-dial

Precision Humidity and Temperature Indicator

Hair-operated and calibrated to profes-
sional standards of accuracy by the maker
of the world's finest weather instruments.
Handsome, modern case—4" high, 5½"
wide, 1½" deep—desk or wall mounting.

FRIEZ INSTRUMENT DIVISION OF

1340 Taylor Avenue
Baltimore 4, Maryland



Expert Sales: Bendix International Division
72 Fifth Avenue, New York 11, N. Y.

Circle No. 81 on Reader Service Card
102

OPPORTUNITIES

(Classified Advertising)

Rates: for "Positions Wanted," \$4.00 minimum, limit 25 words. For all other classifications, \$4.50 minimum for 25 words or under, each additional word 15¢; boldface type or all capitals, \$7.50 minimum for 25 words or under, each additional word 20¢. Box addresses count as five words, other addresses by actual word count. All advertisements in this section are payable in advance.

BUSINESS OPPORTUNITIES

FOR SALE—Established commercial refrigeration sales and service business. Northwestern Ohio. Operation at present 25 mile radius. Write Box 5151, Commercial Refrigeration and Air Conditioning, for detailed information.

POSITIONS AVAILABLE

Have excellent opening for A-1 Commercial Salesman familiar with Hussmann and similar lines. Give complete details first letter, Zerozone Houston, 1120 Wood St., Houston, Texas.

CEE-KLEER INCORPORATES, EXPANDS FACILITIES

Cee-Kleer driers, strainers and sight indicators are now the products of Cee-Kleer, Inc., a recent change in business structure made at the same time as the company removal to expanded production facilities at 947 W. 6th St., Cincinnati 3, Ohio.

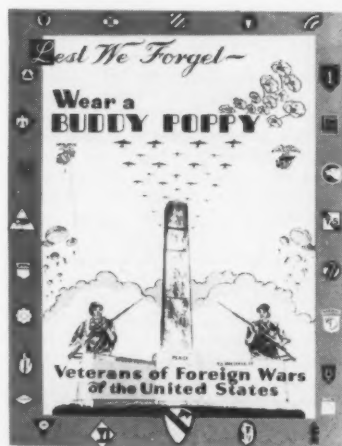
The new factory and general offices afford several thousand square feet more space for complete material storage, machine shop, fabrication and finishing facilities to produce

combination driers-sight indicators for armed force installations without interfering with the production required for distribution through commercial markets.

Phillip Baird, originator of Cee-Kleer, remains at the head of the new corporation as president. Other corporate officers are Stanford Stillpass, vice president, and Alfred Katz, secretary-treasurer.

HANDLES A-B LINE

Huey F. Baker, co-owner of the Savannah (Ga.) Refrigeration Supply Co., has been appointed distributor of Allen-Bradley controls for the south-east Georgia area.



NO MORE FREEZE-UPS of expansion valves or capillary tubes!

ICE-X works like magic

SERVICE MEN SAY: "ICE-X IS GREAT!"



When ice forms in expansion valves or capillary tubes, ICE-X is a sure remedy... ICE-X is non-corrosive—harmless to parts. An ice-eliminator that can't be beat for Freon, Carrene, or Methyl Chloride systems... Order from your jobber. If no jobber, order direct.



Service doesn't falter
when it comes from Harry Alter

Jobbers: Ask for special offer!

The HARRY ALTER co.

Exclusive
ICE-X
Distributor

1728 S. Michigan Ave. Chicago 16, Illinois

Circle No. 82 on Reader Service Card for more information

MAY, 1951 • COMMERCIAL REFRIGERATION



"We find as many occasions to use our Amprobes as we do our pressure gauges—and in refrigeration, that's saying plenty!", writes Mr. Schilling. "An invaluable tool for checking start and run current influx (especially good on sealed units), voltages, causes of fuse blow-outs, and dozens of other uses."

"COULD A DOCTOR GET ALONG WITHOUT A STETHOSCOPE?"

*that's how the Amprobe
rates with John E. Schilling,
owner, Schilling Chilling Company,
1403 E. Southern, Indianapolis, Ind.*



\$49⁵⁰ complete with
genuine top grain cow-
hide leather case and
voltage test leads.

OTHER AMPROBE USERS SAY:

"Far superior to any instrument of any type performing the same service that I ever saw or used. A 'must' item for any refrigeration serviceman or electrician."—Roy V. Culy, Culy Refrigeration Service, Richmond, Ind.

"The Amprobe is easy to take with you when you go to check a motor, due to its small size. Also, the design of the jaws will let the Amprobe work inside the terminal box on most motors."—Leycester Moore, Moore Electrical Motor Service, Brady, Texas.

"One of the handiest instruments I ever owned. It is so small and accurate, I am sorry I never had one before this."—Kenneth O. Bultman, Electrician, Fairborn, Ohio.

AMPROBE—THE SNAP-ON VOLT-AMMETER THAT FITS IN YOUR POCKET!

Reads current without interrupting circuit or breaking insulation

Look what you can do with this one pocket-size tool: Determine load conditions instantly without having to shut down equipment. Spot motor overloads and underloads. Diagnose trouble calls faster, under actual load. Check line voltage and drops. Set overload relays, etc.

- So compact, it fits in your pocket.
- ½ the usual size—only 7".
- ¼ the usual weight—only 14 oz.
- Accuracy: $\pm 3\%$ (of full scale deflection).
- Field-proved and accepted—tens of thousands in daily use today.
- About ½ the usual price.



**Send for
this 16-page manual**

CR 51

PYRAMID INSTRUMENT CORP.
49 Howard Street
New York 18, N. Y.

Please send me your new 16-page Manual—"HOW TO MAKE YOUR JOB EASIER WITH AN AMPROBE."

Send literature on Amprobe Sensitizer and Split Plug.

(print your name, company and address in the margin)

AMPROBE 10X SENSITIZER



Effectively gives the Amprobe 3 additional ranges: 0-1 AMPS, 0-2.5 AMPS, 0-5 AMPS. **\$37⁵**

Model A-6 measures 5 A.C. current ranges: 10/25/50/100/250 amperes; plus 2 A.C. voltage ranges: 150/600 volts. Two other models available.

AMPROBE

A PYRAMID INSTRUMENT

See it today at the better electrical distributors

Circle No. 83 on Reader Service Card for more information
and AIR CONDITIONING • MAY, 1951

INDEX TO ADVERTISERS

MAY, 1951

| | | | | | |
|--|---------|--|---------|--|---------|
| Acme Industries, Inc. | 14 | Gem Refrigerator Co. | 58 | Paragon Electric Co. | 90 |
| Aerovox Corp. | 78 | General Electric Co., Air Cond. Dept. | 6, 7 | Penn Brass & Copper Co. | 76 |
| Alco Valve Co. | 1 | General Refrigerators Corp. | 8 | Penn Electric Switch Co. | 28 |
| Allen-Bradley Co. | 100 | | | Pyramid Instrument Corp. | 103 |
| Allin Mfg. Co. | 93 | | | | |
| Harry Alter Co. | 102 | Halstead & Mitchell. | 22 | Ranco, Inc. | 96 |
| American Brass Co. | 15 | Handy & Harman. | Cover 2 | Refrigerated Equipment Sales Corp. | 71 |
| Ansul Chemical Co. | 25 | Henry Valve Co. | 59 | Reliance Electric & Engineering Co. | 73 |
| A-P Controls Corp. | Cover 3 | | | Remco, Inc. | 81 |
| | | | | Revere Copper & Brass, Inc. | 10 |
| Bally Case & Cooler Co. | 56, 57 | Imperial Brass Mfg. Co. | 70 | Rotary Seal Co. | 65 |
| Baltimore Aircoil Co., Inc. | 64 | Ingersoll-Rand Co. | 99 | Rubatex Div., Great American Industries, Inc. | 62 |
| Bonney Forge & Tool Works. | 5 | | | | |
| Brunner Mfg. Co. | 12 | Jamison Cold Storage Door Co. | 58 | Servel, Inc. | 45 |
| Bush Mfg. Co. | 21 | Jarrow Products | 90 | Cyrus Shank Co. | 93 |
| | | | | Sporlan Valve Co. | 13 |
| Century Electric Co. | 17 | Kelvinator Div., Nash-Kelvinator Corp. | 67 | Sun Oil Co. | 35 |
| Chase Brass & Copper Co. | 40 | Kerotest Mfg. Co. | 20 | Super-Cold Co. | 19 |
| Chicago Metal Hose Corp. | 57 | Kold-Hold Mfg. Co. | 16 | Superior Valve & Fittings Co. | 9 |
| Copeland Refrigeration Corp. | 2 | Kramer Trenton Co. | 91 | Sweden Freezer Mfg. Co. | 104 |
| Curtis Refrig. Machine Div., Curtis Mfg. Co. | 18 | | | | |
| | | LaCrosse Cooler Co. | 74 | Techniflex Corp. | 51 |
| Delavan Mfg. Co. | 77 | Larkin Coils | 95 | Temprite Products Corp. | 60 |
| Detroit Lubricator Co. | 46, 47 | Lehigh Mfg. Co. | 94 | Texas Co. | 88 |
| | | Libbey-Owens-Ford Glass Co. | 26 | Tubing Appliance Co. | 98 |
| Eastern Industries, Inc. | 56 | Linde Air Products Co., Div. of Union Carbide and Carbon Corp. | 69, 101 | Tyler Fixture Corp. | 24 |
| Electric Auto-Lite Co. | 93 | Lynch Corp. | 85 | Typhoon Air Conditioning Co. | 23 |
| | | | | | |
| Filtrine Mfg. Co. | 75 | Madden Brass Products Co. | 78 | Union Carbide and Carbon Corp., Linde Air Products Co. | 69, 101 |
| Fine Products Co. | 101 | Marley Co., Inc. | 54 | United Refrigerator Mfg. Co. | 77 |
| Fogel Refrigerator Co. | 27 | Jas. P. Marsh Corp. | 72 | | |
| Fed Friedrich Sales Corp. | 64 | Mills Industries, Inc. | 4 | Victory Metal Mfg. Corp. | 87 |
| Friez Instrument Div., Bendix Aviation Corp. | 102 | J. W. Mortell Co. | 98 | Virginia Smelting Co. | 83 |
| | | Mueller Brass Co. | 63 | Wagner Electric Corp. | 92 |
| | | | | Westinghouse Electric Corp. | 11 |

PROBLEM: How to Help Fountains BEAT Rising Costs and Ceiling Prices?



ANSWER:
Switch to Sweden
AND STRETCH PROFIT MARGINS

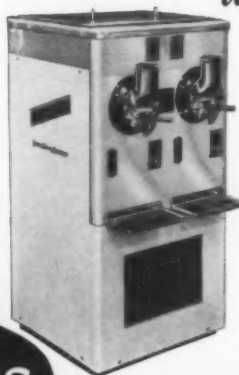
The squeeze is on! But smart operators can put their fountains back in the profit picture by serving Soft Ice Cream, Frozen Custards, Milk Shakes, Malts fresh from a SWEDEN Speed Freezer.

OPERATOR APPEAL—SWEDEN cuts food costs sharply by eliminating hard ice cream shrinkage...using less expensive ingredients. Labor costs are reduced even more drastically through elimination of dipping, scraping, handling. Profit margins are stretched on every sale.

APPETITE APPEAL—The delicious flavor and smooth texture of SWEDEN products make them consistent all-season volume-builders. Superior SWEDEN design and engineering assure uniform quality under all conditions of operation.

SWEDEN gives MORE SERVICE...needs LESS UPKEEP!

A Model for Every Need



MODEL 1-131A20

(At left)—Batch-feeding freezer for busy fountains...Automatic filling during rush periods from refrigerated stainless steel supply tanks. Compact...easy to operate and keep clean.

SWEDEN SPEED FREEZERS

For details, refer to classified phone listing "Ice Cream Freezers" for your local dealer; or write, wire or phone

SWEDEN FREEZER MANUFACTURING CO.
DEPT. R-1 SEATTLE 99, WASHINGTON

Circle No. 84 on Reader Service Card for more information

THIS YOU MUST SEE . . .



**A VALVE YOU CAN
USE FOR:**

- Any Application
- Any Pressure Limit
- Any Superheat
- Any Position
- Any Ambient Temperature

...it's the SENSATIONAL NEW



no. 209

THERMOSTATIC EXPANSION VALVE

The UNIVERSAL expansion valve the whole industry's talking about!

You owe it to yourself to get the full story on this remarkable new expansion valve — because it's the most useful all-around valve ever designed!

Just think of these features: It's adjustable for ANY pressure limit or for ANY superheat. You can install it in ANY position — in ANY ambient temperature — on ANY application. No matter what

the job may be, you can "tailor-make" the No. 209 to fit — instantly!

Now think what these practical features mean to you. They save you time and trouble — reduce inventory — cut costs — increase profits. No wonder users call the No. 209 the greatest advance in expansion-valve design in twenty years!



DEPENDABLE Controls

A-P CONTROLS CORPORATION

(formerly Automatic Products Company)

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**Guard Your Family
STRIKE BACK!**



GIVE to Conquer Cancer



IF SOMEONE IN YOUR FAMILY HAD CANCER, you would do anything . . . everything that would help. And today there is so much that you can do to help. Tens of thousands of families just like yours meet cancer every year and triumph over it. But we are still losing too many men and women we love.

Doctors can now cure half of those who develop cancer if the disease is diagnosed in its early stages. Yet in 1950 some 210,000 families lost a father, a mother or a child to cancer. Many of them—probably 70,000—could have been cured.

To save more lives, we all must help.

Your gift to the Cancer Crusade will help guard your family by providing more research, more

life-saving education, more training for scientists and physicians, more equipment, more services for those already stricken with the disease.

Cancer is man's worst enemy. Striking back at cancer costs money. Any contribution is welcome but, the fight against this major threat deserves major support: dollars—tens—twenties—hundreds of dollars. Will you help?

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